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THE MANAGEMENT OF BURNS *

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To attempt to establish a line of management of all burns *a priori* is somewhat preposterous. Following the doctrines of Hebra, and accepting his division of burns into three degrees, we find that the pathologic process in each is different. In burns of the first and second degree there is an inflammatory reaction of the skin, while in the third degree there is primary necrosis. The degree of the burn, the medium producing the burn, the depth of the injury in the tissues, the extent of skin burned and the condition of the nervous system of the patient, all influence the treatment of such important injuries. In general we can state that the best treatment is that which favors the sloughing of the burned skin, which maintains the sterility of the resulting wound and promotes granulation and the newly forming epidermis, so that a regular soft cicatrix may be obtained.

A burn is always a serious injury in view of the resulting shock, and of the action of poisonous substances arising from the burned skin. The treatment of the local lesion is only a part of that necessary, for the results on the general system have to be taken under consideration.

In 1902 I reported 88 cases of burns, of which 56 were in men and 32 in women.

The burns seen in that year were: of the first degree, 8; second degree, 54; of the third degree, 26.

The results of that year were: recovery in 61; death in 24, while 3 left the hospital.

Last year we had 49 cases of burns: in men, 34; in women, 7; in children, 8.

The results were: of the 34 men, 32 recovered, 2 died. Of the 7 women, 5 recovered, 2 died. Of the 8 children, 6 recovered, 2 died.

In severe burns the patients when taken to the hospital are greatly excited, crying and screaming with pain. As soon as the wounds are dressed and the patient is placed in bed an injection of morphin, ¼ grain, produces quiet. Some so regain their normal power as to furnish details of the accident and ask questions about their relatives. After a severe burn, the patients as a rule do not void urine, and when they do it is scanty and contains either blood or a quantity of albumin.

A woman suffering from a slight epileptic attack fell while carrying a coal-oil lamp, her clothes being set on fire. When taken to the hospital nearly two thirds of the body was burned to a crisp, from the feet to the chest. Both legs were just baked, the whole surface brown, hard and insensible (Fig. 1). She received an injection of morphin, ¼ grain, and was placed in a water bed in which a handful of sodium borate had been dissolved to remove the burned clothes adherent to the skin. After cleansing the burned surface she was placed in bed, and compresses were applied moistened with a 2 per cent. solution of aluminum subacetate. The patient lay in apathy and began to vomit bilious and bloody matter. This continued for two days. The urine was scanty and contained albumin. The following day she received a subcutaneous injection of normal salt solution, and also strychnin, 1/30 grain. The stupor passed away and the pulse improved considerably. She lived twenty-four days. The eschar was detaching, but it was a difficult matter to remove it, because the muscles were becoming detached and exhaling an offensive odor. The patient grew very weak, became delirious, fell into stupor and died.

Death was due to sepsis. Although the action of the fire or of different mediums at an elevated temperature is limited to the skin, yet general disease follows. The burn has a remarkable influence on the organism. The severe symptoms following an extensive burn of the skin are in relation with the entity of the lesion. At times, even in consequence of an apparently light combustion, severe symptoms endanger the life of the patient. For this reason the burns have a general as well as a local treatment.

The treatment of burns[1] by forcibly removing the burned skin and deep blisters is risky, unnecessary, and will not accomplish the purpose. This was proposed by Sneve[2] and summarized by W. A. Jack, Jr.,[3] and Brazer[4] recommended that as much as possible of the burned skin be removed, and the surface then washed with gasoline, while Lieber,[5] advocating the same process, advises washing the bleeding surface with benzin. Although this operation is carried on under an anesthetic, and is followed by an injection of morphin, it is to be avoided. The shock is so severe that the patient may not recover from it.

According to my experience, time is necessary to give the burned tissues a chance to detach from the

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. The Treatment of Burns, New York Med. Jour., March 14, 1914, p. 541.
2. Sneve, Haldor: Treatment of Burns, THE JOURNAL A. M. A., July 1, 1905, p. 1.
3. Jack, W. A., Jr.: Washington Med. Ann., May, 1912.
4. Brazer, Louis: New York Med. Jour., Aug. 2, 1913.
5. Lieber, M.: Beitr. z. klin. Chir., 1912, lxxxi; Die Verbrennungen und ihre Behandlung, Dermat. Wchnschr., 1913, No. 23, p. 657.

normal nonburned structures. Even in the second-degree burns, when large blisters are formed, it is better to puncture the blisters in several places to allow the serum to exude, leaving the old epidermis for some time to cover and protect the denuded papillae of the derma. Some blisters are superficial, the serum is contained only in the stratum corneum, and when punctured the whole contents ooze out. Other blisters are deep, they affect the entire thickness of the corpus mucosum, and when opened very little or no serum escapes. The corpus mucosum is thick and has the appearance of grayish pulp.

Fig. 1.—Burn of third degree. Leg baked. Surface hard and insensible.

The histologic changes of the skin in the second degree burn are characterized by an enlargement of the papillae, enlargement and congestion of the capillary blood vessels, swelling and infiltration of the collagenous tissues of the derma. The corpus mucosum is swollen, and a layer of small leukocytes lies on the papillae and beneath the epidermis, which forms the vault of the bulla. According to Kaposi[6] the papillae appear like a reticular tissue whose meshes contain serum and white cells, epithelium and fibrinous masses. The blister, either breaking of itself by the pressure of the serum or artificially broken, undergoes a regressive process. When exposed to the air the cuticle dries up, the fibrinous contents form a thick crust under which the epithelium is reproduced, which covers the papillae. When a deep blister is opened the disorganized tissues of the mucous layer gradually slough off. The inflammatory process diminishes in intensity, the epithelial cells underneath become more coherent, cover the papillae and form a new epithelial layer which completes the epidermization without leaving a scar.

The burns at the time they occur cause great pain; a few hours later fever follows. In the same way when the burned tissues begin to slough off, a high temperature shows the general systemic reaction. Although a second degree burn is not so dangerous, yet, according to the extension and the age of the patient, it can have fatal results.

Fig. 2.—Burn of third degree caused by flame. Skin dark brown and dry like leather.

In a third degree burn the skin has been disorganized; there is mortification of the tissues. The eschar involves the derma, and may reach to the subcutaneous tissue. When the skin has been burned to such a degree by flame it appears dark brown (Fig. 2) and dry like leather; when burned by steam at high pressure, it looks white like marble, hard and coriaceous, and is insensible to the touch. In the skin so burned the blood circulation is destroyed, and the vitality also. Together with the disorganization of the skin (Fig. 3), coagulation and decomposition of the proteic substances takes place. The products of the disorganized albuminous tissues then arising from the burned skin are poisonous and according to Ferrarini[7] cause the systemic symptoms, and even death. Spietschka[8] found that these poisonous elements are excreted by the kidneys. The urines of men and of animals affected with extended burns are poisonous. To the coagulated albuminous matters and to the burned blood corpuscles these poisonous elements may be traced.

In the beginning it is difficult to establish whether a burn is of the second or of the third degree, especially when it has been produced by steam. After two or three days the burned skin assumes a dead appearance, and at the edges the elimination process begins, separating the burned from the healthy skin.

Figure 2 shows a third degree burn, caused by flame. It was taken the second day after the occurrence. The skin is baked brown, dry and hard, and is insensible to the touch. The whole surface is swollen; in some parts the cuticle has been removed, in others it is forming blisters. It was treated with continuous moist compresses with 2 per cent. solution of aluminum subacetate. Figure 4 shows the same burn one week later. Toward the periphery where the blisters were situated the epidermization is well advanced. Where the eschar sloughed out the granulations are forming. In the center where the burn was still deeper, the eschar is still hanging on. The eschar is removed without forcing, the shreds which are detached are seized with a thumb forceps and taken off with scissors. In this way we avoid pain, and still better, the bleeding. When the blood vessels are broken the door is opened for infection. The burned skin in the tissues is so adherent that it is impossible to remove it without producing trauma.

Nature removes the burned from the healthy tissues, and it is our duty to help this process and not to disturb it. In many cases when we believe we have a very deep eschar we are surprised in a few days to see that the shreds of burned skin are sloughed off and there remains underneath a clean healthy granulating surface, which soon shows islands of epithelium and in a short time heals. The elimination of the eschar begins between the third and the fifth day.

6. Kaposi, M.: Pathologie et traitement des maladies de la peau, translation by Besnier and Dayon, Paris, 1891, i, 492.

7. Ferrarini, Guido: Die toxische Lehre in der Pathogenese des Verbrennungstodes, Dermat. Wchnschr., 1913, No. 12, p. 333.

8. Spietschka: Ueber verbrennungen und Verbrennungstod, Arch. f. Dermat. u. Syph., cxii, Nos. 1 to 3.

An inflammatory process starts around the eschar by way of a groove which separates it from the healthy tissues. The separation is effected in from eight to twelve days. The resulting granulating wound has an uneven bottom and irregular edges, on account of the irregularity of the mortification of the tissues. After the elimination of the disorganized tissues, abundant granulations come up to replace the loss of substance of the skin. From the edges of the granulating wounds the epithelium is concentrically reformed and, furthermore, islands of epithelium appear in a round form in different places in the middle and these, gradually growing, peripherically cover the newly formed tissues. This is the process of cicatrization. Scar substitutes the lost skin; it has no papillae and no hair follicles. The difficulty of the cicatrization is the reproduction of the horny layer. The granulations sometimes are irregular, luxurious and abundant, and if not watched and kept under control, the resulting scar may become irregular, uneven, inelastic, contracted, distorted, protuberant and disfiguring. Figure 5 shows a burn of the leg and thigh, which came under my service twenty days after the occurrence. The patient had remained in his house treating himself. It was covered with crusts and was infected with *Bacillus pyocyaneus*. The dressing in a few hours turned blue. Compresses moist with 1:2,000 solution of mercuric chlorid cleared the surface of infection. In Figures 6 and 7 burns of both hands and feet of the second and third degree are well illustrated. On the hands deep blisters formed, which in a few days were removed and in a short time the burn healed. It took nearly two weeks for the eschar to slough off the feet with a third degree burn, and nearly four weeks for complete recovery.

Fig. 3.—Section of burned skin. From photomicrograph. Epidermis missing; no papillary layer. Lymph spaces filled with coagulated albuminous matter. Blood vessels shown as streaks of dark granules, the upper surface infiltrated with black granules. Collagenous tissues hardened and shrunk.

LOCAL TREATMENT

In a first degree burn the application of dry powders such as talcum powder, bismuth, or alum is the best treatment. Rosslenger[9] has already recommended the exclusion of salves and of baths in these burns in order to avoid maceration and excoriations of the epidermis, which often constitute open doors for infection. In case of severe pain I recommend application of compresses moistened with a solution of aluminum subacetate of from 2 to 5 per cent., which will calm the burning pain. As soon as the patient is eased the dry powder is applied. In a few days the redness and swelling disappears, and under a superficial desquamation the skin returns to its normal condition.

In second degree burns I apply moist compresses of a solution of aluminum subacetate. When the blisters are distended with serum they are opened, draining the fluid and leaving the epidermis in place to protect the denuded papillary layer.

The application of compresses moistened with a 1 per cent. solution of picric acid has been highly recommended, especially by Boland[10] of Atlanta, Ga., and a 3:4,000 solution of potassium permanganate has been recommended by Beck.[11] In my service I could find no advantage that the picric acid or potassium permanganate had over the aluminum subacetate. It has been found disagreeable to handle on account of the staining. Compresses of sterile gauze are applied on the burned surface and kept continually moist with the aluminum solution, and the whole is bound with a piece of oiled silk, so cut as to hold the dressing in place.

Oily substances as carron oil, oleum lini and aqua calcis, so much recommended by Kaposi[6] and Wertheimer,[12] according to our experience must be avoided. We must agree with Verney[13] that carron oil in many cases is dangerous, on account of infecting wounds.

When the shreds of epidermis forming the blisters are easily detached all are cut off by means of a pair of scissors and a thumb forceps and the whole surface is gradually cleared. The papillae are already covered by a newly formed epithelium, the surface is red, and a little oozing can be noticed. At this point the Sneve[2] treatment, exposing the surface to plain air is very useful. In the beginning the patient complains of the burning and wishes to have it covered, but after a while he does not experience much discomfort. The

9. Rosslenger: Die erste Behandlung bei Verbrennungen und Verbruhungen, Intern. Med. Kong. in Wien, September, 1892.

10. Boland, Frank K.: New York Med. Jour., Aug. 2, 1913.

11. Beck: Treatment of Severe Burns in Children, Therap. Monatsh., No. 8, 1913.

12. Wertheimer: Zur Behandlung der Verbrennungen in Kinderalter, München. med. Wchnschr., 1892, No. 31.

13. Verney, A. E.: Ueber Behandlungen von Brandwunden, Deutsch. med. Ztg., No. 100, 1894.

surface is left exposed to the air for one hour at first, later for two or three hours. The surface is then dusted with powder and covered with sterile gauze. A second degree burn can recover in the course of one week or ten days. Some little points may remain which ooze and granulate, these may be touched up with 3 per cent. nitrate of silver, and to prevent the formation of crusts at night can be covered with 2 per cent. boric acid in petrolatum.

The treatment for a third degree burn is nearly the same. I mostly use compresses moistened with aluminum subacetate solution for the purpose of softening the eschar and helping the process of elimination. In the skin burned to the third degree, there is no more life, no more circulation, the proteic elements are decomposed, and it has to be eliminated from the living tissues. This is done by nature herself. Between the third and the fifth day a groove is formed by inflammatory process around the eschar which is gently detached, and gradually eliminated. With scissors I cut away all the shreds of the eschar which hang on the surface, without forcing. When the eschars are removed by force the tissues tear and bleeding follows. Bleeding means the opening of the blood vessels, and causing them to absorb the putrid material, which is derived from the burned tissues which form the eschar. This is the time when the patient has more intense fever due to the entrance of the poisonous substances into the system. When fever is high and pus is formed on the surface, compresses moistened with 1:2,000 solution of mercuric chlorid have given me the most satisfactory results.

When the eschar has been completely eliminated, the resulting wound is rose red, clean, and slightly uneven on account of the different depths of the burn. On the whole surface healthy granulations form a substitute for the lost skin. From the epidermis at the edges an epidermic layer gradually tends to cover the granulating surface as a whitish thin cover. In different places in the center of the granulating wound, islands of epidermis are seen, which look like epidermic grafts, and, in a round shape, keep reforming the epidermic layer. We believe with Hebra and Kaposi that these epithelial islands are the results of preexisting epithelium emanating from portions of the mucous layer, or from hair follicles which escaped destruction.

Fig. 4.—Same burn shown in Figure 3, one week later.

Fig. 5.—Burn from hot water, fourth week.

Recovery is therefore obtained through cicatrization, from newly formed connective tissue in which papillae, hair and glands are missing, and which is covered by a thin, slowly produced epidermis.

In order not to disturb the process of epidermization, the Sneve method is useful. It has been pointed out that the direct application of the gauze on the granulating area tends to delay the healing of the burns. The adhesion of the gauze to the surface has been considered as interrupting the process of repair, and as causing unnecessary pain and drain of nervous energy each time that the dressing is removed.

As I have already said, the exposing of the granulating wound to clean plain air is advisable at this time, and the surface is improved by its drying action. So long as parts of the eschar, necrotic particles and infectious detritus are still on the surface, moist dressings with mercuric chlorid must be used, in order to clean the surface and favor their sloughing off.

The open-air treatment and the direct application of the sun's rays to ulcers and wounds has been advised for many years. Recently attention was called to this by Wagner[14] and Oscar Barnard,[15] the latter claiming it to be a disinfecting and a healing power. In minor burns, open-air treatment had been used by W. P. Copeland,[16] protecting the wound by means of a pasteboard box, and by Reid,[17] who protected the surface with a wire cage.

As stated, we expose the granulating surface to the

14. Wagner, H.: Quoted by Sneve, Note 2, Zentralbl. f. Chir., December, 1903.
15. Barnard, Oscar: München. med. Wchnschr., Jan. 5, 1904, quoted by Sneve, Note 2.
16. Copeland, W. P.: New York Med. Rec., 1887, quoted by Sneve, Note 2.
17. Reid, G. Archdall: Lancet, London, March, 1898, quoted by Sneve, Note 2.

air only for a certain time, from one to three hours. More than that inconveniences the patient, the secretion begins to form crusts, and we prefer to cover the surface again after this length of exposure.

It seems that the plain air acts by stimulating the granulating surface from which clear serum is oozing. The serum dries up when exposed to the air and forms an homogeneous film, which covers the granulating papillae. From the edges the epithelial cells underneath keep extending their whitish layer which covers the granulating surface. When exposed directly to the sunlight the action is much stronger, and if the surface is not sterile, vesicles are formed at the edges, which easily break and form crusts which are soon removed with compresses moistened in a 1:2,000 solution of mercuric chlorid.

Fig. 6.—Burn of second degree. One week after occurrence.

It must not be forgotten that the granulations need to be touched with a solution of silver nitrate every other day to prevent irregular, or keloidal scar. The wound after being exposed for from two to three hours, must be covered with a suitable dressing as 2 per cent. borated petrolatum on English lint. When the granulations are pale and show a tendency to the formation of pus the application of a mixture of castor oil and Peruvian balsam also gives good results. This dressing, however, cannot be used for a long time on account of producing irritation. Kuss[18] advocates covering the burned surface with a piece of caoutchouc paper as a protective, cut exactly to fit the wound, having holes to drain the serum, and allowing moistening in salt solution. This is covered with patches of gauze also moistened with salt solution. When a burn involves a joint, the scar has to be watched so that it does not cause contracture of the limb. The fingers, eyelids, and lips, must be kept separated with lint, so that no adhesions may occur.

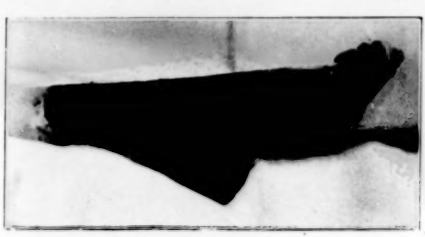

Fig. 7.—Burn of third degree. Four weeks required for full recovery.

In a burned area of a large size, without a tendency to the formation of epidermis, a few grafts of epidermis after the method of Reverdin, will help to produce the epidermization.

SYSTEMIC TREATMENT

An extensive burn, no matter of what degree, causes always a general systemic reaction. In the beginning the patient may suffer primarily from the shock. Klauder[19] calls attention to this condition, and advises injections of morphin or strychnin in the very beginning to prevent this condition. In my service cases of shock have been rare. More often I have seen gastroduodenal ulceration, with continuous vomiting, sometimes nephritis, and pneumonia. In nephritis the intravenous injection of Fisher's solution with the internal administration of digitalis has greatly helped, and in a few days the urine was clear of albumin. The fever following the burn rises and falls somewhat resembling that of typhoid fever. In all my cases the administration of chinin has been very beneficial, and I consider it one of the most useful antiseptics. Gradually as the patient improves, when the fever is gone, a substantial diet must be given with some tonic iron preparation to improve the general condition of the patient.

18. Kuss, Georges: The Treatment of Burns, Med. Standard, April, 1914, No. 4, p. 137.
19. Klauder, Joseph V.: New York Med. Jour., Aug. 2, 1913.

ABSTRACT OF DISCUSSION

DR. W. A. PUSEY, Chicago: It is not my experience to see many cases of burns, but I have a strong impression that burns are not, as a rule, well treated. I think the most useful part of Dr. Ravogli's paper is that in which he emphasizes the value of wet dressings, and particularly of wet dressings of aluminum acetate solution. There is, I believe, an open field for the writing of a book on "old and useful remedies which have been forgotten." In that book I would put among the first subjects, aluminum acetate solution, with which dermatologists are all familiar, but whose value is apparently unknown to the great majority of the profession. If Dr. Ravogli's paper does no more than call to the attention of the profession the value of dilute aluminum acetate solution as a bland antiseptic dressing it will have served an excellent purpose.

DR. JOSEPH ZEISLER, Chicago: In the case of a burn we should always endeavor to make a prognosis at the beginning. People easily misjudge the nature and the importance of burns from the local evidence presented. I have seen severe burns in which I pronounced a fatal ending in a few hours or days, when the parents were utterly amazed. When they looked at the skin and failed to see blisters or injuries, they could not understand that it was a serious case. The general public does not know of the apparently harmless appearance of the skin in burns of the third degree. In one case in which a child was burned by a gasoline fire, the skin had a peculiarly waxen appearance; and the parents did not realize the serious case they had before them until the child died.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I would like to amplify the remarks of Dr. Pusey concerning the application of wet dressings. There comes a time in the treatment of most, or many burns—as in cases of some eczemas—when the particular therapeutic indication is for something slightly astringent and something which promotes epidermization—in some cases an application of acetate of aluminum; but I like 1 or 2 per cent. of resorcin or salicylic acid. Resorcin is my favorite. Its effect many times is magical; and there are many burns in which that condition must be fulfilled. I think it is an ideal application.

DR. A. RAVOGLI, Cincinnati: I thank Dr. Pusey for his remarks on the utility of the acetate of aluminum solution, which I prefer to any other thing, on account of its action.

It quiets the pain, diminishes the hyperemia and does not give any trouble through discoloration, such as occurs with picric acid and permanganate of potassium, which have no other beneficial effect than to soil the clothes and the attendant's hands. Early prognosis is extremely interesting, as Dr. Zeisler has said. I have seen cases in which it was thought the patient would rapidly recover, but he died, and vice versa. In the matter of resorcin, I prefer mercuric chlorid for this reason: I have shown the illustration of a leg and thigh burned after twenty days which came under my service, and when the patient was taken to the hospital the lesion was infected with the *Bacillus pyocyaneus*. I must say I am afraid of *Bacillus pyocyaneus*. The use of mercuric chlorid 1 or 2 per thousand by continuous bathing I think is the best way to get rid of the *Bacillus pyocyaneus*. The Sneve treatment is very good. Expose the resulting wound, when granulating, to the plain air for one hour, and no more, as after one hour the patient feels such discomfort that he cannot stand any more; for this reason very seldom do I extend that to two or three hours. In the same way I use the direct rays of the sun. I treated a case of very severe burn in a boy of 12 with a large granulating surface infected with pus germs; the exposure to the sun had an antiseptic effect on that suppurating surface and epidermization began. But the boy could stand hardly one hour's exposure to the rays of the sun.

EXPERIENCES IN MILITARY SURGERY*

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The ideas presented here were gained during a service at the American Ambulance Hospital at Paris during the latter part of 1914 and the early part of 1915. Hence the point of view is that of the surgeon at a large base hospital.

In any discussion of military surgery, the questions of shock and physical fitness naturally occupy a prominent place. Surgeons at the first-aid stations say that the degree of shock exhibited by wounded soldiers is much less than that seen in civilians sustaining similar injuries. It is remarkable how little shock is shown by men received at the base hospitals suffering from grave injuries 24 to 48 hours after being wounded. There can be no doubt that the mental attitude plays a considerable part in this. The wounded soldier, while discouraged and suffering, sees visions of a comfortable bed and pleasant surroundings, feels himself somewhat of a hero, and escapes at the same time from the ever present specter of impending death. In the mind of a civilian similarly injured, the mental picture is entirely different. He begins immediately to grieve over a multitude of troubles, loss of wages or position, and in civil life, gunshot injuries are not infrequently attended with shame and chagrin to the sufferer. The physical condition of the French and English soldiers speaks well for those in charge of the commissary. They were uniformly well nourished and healthy in appearance, facts which go far toward minimizing shock.

Fig. 1.—Showing type of ambulance body used on Ford chassis.

The modern sharp-pointed, steel-jacketed, so-called humane rifle ball, despite all claims to the contrary, is remarkable for its severe and mutilating trauma. The point of entrance may be a small slit, or round wound, but the wound of exit is quite often large and ugly, with herniated muscles, giving it a mushroom, or explosive, appearance. In our Spanish war, the high velocity rifles, shooting balls of the Mauser type—that is with an oval end and with the center of gravity near the middle of the mass—made wounds which were, comparatively speaking, quite humane. The effects of the modern rifle bullets are usually classified according as they occur in one of four zones. These are:

First zone (0 to 500 yards) explosive effects.
Second zone (500 to 1,000 yards) penetrating effects.
Third zone (1,000 to 2,000 yards) simple wounding effects.
Fourth zone (2,000 to 2,500 yards) contusive wounding effects.

It is no exaggeration to say that the modern sharp-pointed bullets are all potentially dumdums, for it is the rule rather than the exception that the ball, after striking, pivots and turns sidewise. This is explained by the fact that the center of gravity is situated far back, near the base, so that the slightest deflection of the point from the line of flight is an instantaneous command for the base to swing forward. From such balls picked up on the battlefields, and some extracted from the wounded, it is seen that not infrequently the base of the bullet is deformed in consequence of striking first, while the sharp point is in nowise altered. From this, it would seem that these bullets often possess a wobbling motion, and even rotate on their transverse axis, particularly toward the end of their flight.

Modern field artillery consists, for the most part, of 3-inch field guns and 6-inch howitzers. The extreme ranges of these guns vary from 5,600 to 6,700 yards. The projectiles weigh from 15 to 20 pounds. The German shrapnel contains from 300 to 500 round lead bullets, hardened with antimony, which vary from 1 to 1.5 cm. in diameter, and in weight from 10 to 16 grams. In the present war more than 80 per cent. of the ammunition used by field guns is in the form of shrapnel. A 3-inch shrapnel shell may be described as a steel or brass tube with a solid base and a detachable head in which there is a time fuse. At the base, there is a charge of about 3 ounces of black powder, and in the center of the tube is a core of gun cotton to assist in the explosion. Surrounding this core are placed lead balls, which are, in turn, surrounded by the smoke-producing matrix. This latter serves as an index to the gunner to locate the point of explosion. Shrapnel will kill at 6,500 yards, at which distance it

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has a velocity of 565 feet per second. At the moment of the explosion, an additional 300 feet per second is imparted to the lead bullets—thanks to the powder and gun cotton. The time fuse can be cut so as to cause the projectile to explode at any given one-sixth of a second during its flight. The number of effective fragments varies from 600 to 1,500, and area of dispersion, from 400 by 200 yards to 150 by 75 yards.

The Germans have an 11-inch howitzer with a range of 8 miles, which shoots a projectile weighing 748 pounds. This strikes with an energy of 5,000 foot-tons. It requires a blow of 60 footpounds to kill a human.

The terrible efficacy of modern artillery has not been exaggerated in any degree. Shrapnel wounds are more frequent than rifle injuries, and are often multiple. Thus, in 250 wounded French soldiers, reported by Hartmann,[1] 169 were injured by artillery projectiles; 127 by fragments of shells; 41 by shrapnel bullets; only 99 by rifle shot.

Fig. 2.—Mutilating effect of rifle ball at 600 yards. Complete avulsion of lower jaw. Ball barely touched shoulder, which caused it to pivot. Little shock. Recovery.

Wounds caused by artillery differ chiefly from rifle wounds in that the missiles are apt to be larger, and, traveling at a lower velocity, they carry more clothes and dirt into the wounds. It is noticeable how frequently shrapnel bullets break a bone, and at the same time are arrested in the tissues. The singular of bone is used advisedly, for one rarely observes both bones broken either in the forearm or leg. It would seem that they possess just the required momentum to break any bone, even the femur or a vertebra, and this accomplished, they are content to rest and do no more.

The iron envelope of the shrapnel shell is shattered into thousands of pieces at the moment of explosion, and the wounds made by these rough masses are often severe and lacerated. It is quite puzzling how small the wound of entrance can be in comparison to the size of the fragment itself. Thus, a piece of ragged shell which had traversed the anterior wall of the axilla measured 1 by 1¼ by ½ inch, and, taken from the chest cavity, had a wound of entrance at the anterior border of the deltoid which measured less than ½-inch long, and was a mere slit, a phenomenon which can with difficulty be explained by allowing for the greatest elasticity of the skin.

The regional distribution of injuries in battle has been estimated as follows:

	Percentage	Mortality Percentage
Head	15	51
Neck	2	18
Perforating spine	2	75
Perforating chest	4	25
Perforating abdomen	3	65
Upper extremities	25	2
Lower extremities	30	2

1. Hartmann: Rev. Sc. gen., No. 9, Dec. 19-26, 1914.

As a basis for the sanitary and ambulance corps, it is estimated that the battle casualties are as follows:

	Percentage	
Killed	20	
Nontransportable — serious head and abdominal injuries	8	
Requiring transportation	32	20 per cent. sitting up. 12 per cent. recumbent.
Slightly wounded—able to walk	40	

Patients whose injuries in the opinion of the surgeon at the classifying stations would permit their returning to the firing line within three weeks were sent to the hospitals known as the hospitals of the zone of the army. These hospitals are located within an imaginary zone extending backward about 20 miles from the firing line. Those whose injuries were most serious were sent to the base hospitals. To attempt an enumeration of the various wounds seen, bizarre effects, etc., would be endless and useless.

At the base hospitals, there were no fresh gunshot wounds of the abdomen to be seen. Now and then a patient who had survived with some complication, such as an abdominal abscess, was sent in for an operation. Acute appendicitis was fairly common. At no time did I see a wound made by the bayonet. One traumatic aneurysm was seen. The treatment of the different types of wounds varied somewhat, according to their location and extent; but, in the main, a routine was followed which was applicable to all. Roentgenograms were taken as soon as possible after admission, and used as guides in the operative procedures and after treatment. Many of the operations are merely dressings under ether. All small wounds of entrance or exit were freely enlarged, careful search being made for foreign bodies, particularly bits of clothing. Irrigation with normal salt solution was much used in the mechanical cleansing of the wound. Personally, I preferred, and used, a 5 per cent. solution of benzoate of soda, both as an irrigation and wet dressing. It acts in two ways: first, by virtue of its hypertonicity, it induces a flow of lymph in the wound, thereby lessening the chances of toxic absorption; second, it has a preservative effect on the devitalized tissue surrounding the track of the missile. It is in this dead, pulpified tissue that the saprophytes find their favorite abode. So impressed were they, in one hospital, with doing away with this pulpified tissue, that one saw the wounds being burned out with a large blow-pipe flame, a method which was undoubtedly too heroic. The use of benzoate of soda solution was begun somewhat late in my service, and while

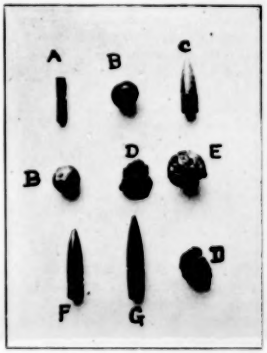

Fig. 3.—Various missiles: *A*, rivet; *B*, *B*, small sized shrapnel; *C*, German rifle bullet; *D*, *D*, pieces of stone; *E*, large size shrapnel; *F*, English rifle ball; *G*, French rifle ball.

I have no statistics to present, I have no hesitancy in saying that it had a beneficial effect on the wounds. In no case in which it had been used did gas gangrene develop, and, in all cases, the wounds were kept sweet, and free from the terrible odors with which one often had otherwise to deal. The main point in the treatment of the wounds, however, consists in the establishment of free drainage. This is best accomplished by free incisions and the use of large, fenestrated soft-rubber tubes, varying from one-quarter to three-quarters of an inch in diameter.

Fig. 4.—Shrapnel wounds, patient dead. The instructions to the soldiers are, to fall prone when a shell is expected to explode nearby.

The great complications most feared in military surgery are tetanus and gas gangrene. Cultures taken from wounds were teeming with aerobes and anaerobes, as well as the ordinary pyogenic cocci. It is safe to say that more than 95 per cent. of the wounds suppurated. This may be explained by the fact that this war is a dirty war in more ways than one. Bathing facilities for the soldiers, for the most part, have been entirely absent or quite limited. A wounded soldier who in civic life had been a man accustomed to the luxuries, told me that he had not bathed in more than three months. The most of this time he had spent in the trenches. The amount of tetanus now seen is almost negligible—thanks to the general use of antitoxin. In the early part of the war, Hartmann reported 36 cases developing in 2,473 wounded soldiers, and at the Hotel Dieu, of Bourg, 7 cases developed among 900 wounded. In none of these cases had antitoxin been administered. I saw one fatal case in which the infection came from frozen feet, and, unfortunately, the prophylactic dose of antitoxin had not been given. In another case, the antitoxin was administered only on the sixth day after the receipt of the injury—a shrapnel ball having passed through the right thigh and lodged in the left. Two days after the antitoxin was administered, that is, eight days after the injury, symptoms of tetanus first appeared, and soon became quite marked. It is interesting to note that his wounds were closed without drainage by a field surgeon, and that he spent the first night after being injured in a stable. This patient recovered after receiving daily doses of 40 c.c. of antitetanic serum injected intraspinally, a like amount of spinal fluid having first been withdrawn. This was continued for three consecutive days, and thereafter 60 c.c. were injected daily for several days into the muscles. There is one point in regard to tetanus which has been noted in this war, I believe, for the first time; that is, that infection by tetanus bacilli is apt to recur whenever operative procedure is carried out on an old wound which has previously been the site of a tetanic infection. It has been demonstrated that the spores of tetanus may live for months in the walls of wounds or old sinuses in which the circulation is quite feeble. Such a patient may thus become a tetanus carrier, differing from the typhoid carrier, in that he is dangerous only to himself. Such cases, when they are to be subjected to a secondary operation should always be given a prophylactic injection of antitetanic serum the day before the proposed operation is undertaken.

Fig. 5.—Condition of feet from frostbite in the trenches, January, 1915. Feet were frozen ten days before picture was taken. Amputation resulted in recovery.

The other great complication to be feared is the one of gas gangrene; the more so, because we have no certain means of preventing its development, and once developed, no sure method of combating it. Maisonneuve, in 1853, first described the condition. In 1864 Pirogoff named it acute gangrenous edema. Gas bacillus infections as seen in the present European conflict are usually of a mixed type, pyogenic organisms growing in symbiosis with putrefactive saprophytes. It is admitted on all sides that the causative agent is an anaerobe, or anaerobes. The *Bacillus perfringens*, which is identical with the *Bacillus aerogenes capsulatus*, is quite constant, and is generally considered as being responsible for the condition. It was present in all cases at Neuilly. Other bacilli which have been recorded as causative are: *Bacillus oedematis maligni*, *Pseudobacillus oedematis maligni*, and *Bacillus coli*.

Clinically, gas gangrene presents a striking feature. In all cases seen by me the process began in an extremity, and in every instance there had been a serious primary injury to the great vessels of the limb. There was a rapid spreading of the process, with an increasing area of anesthesia, often involving the entire limb within thirty-six hours. In some cases there was a fairly distinct line of demarcation; in others, the infection was progressive and extended to the trunk and became generalized.

Gas gangrene, contrary to moist gangrene, begins at the edges of the wound and not at the periphery. The edges are at first an angry red, later become greenish, and, finally, turn black. The skin is cold and clammy, of a dark, bluish-black color, with many large blebs on the surface, and the whole affected extremity is enormously swollen. Crepitation may be felt on palpation, and the tissues to the touch give a peculiar pulpy, boggy sensation. If incised, a flow of dark bloody fluid results, which contains many bubbles of gas. The gas may be seen to bubble up from the tissue planes into the wound when pressure is exerted thereon. In drawing blood for a blood culture in cases in which the infection has become systemic, many bubbles of gas may be seen to flow into the receptacle directly from the vein. At

necropsy, myriads of bubbles may be seen in the mesenteric vessels. Dr. Benjamin Jablons, pathologist at the American Ambulance Hospital in Paris, demonstrated to me a phenomenon first observed by himself, namely: the presence of very small subperitoneal blebs, or vesicles, mostly on the intestines; but also beneath the parietal peritoneal membranes, which first make their appearance from four to five hours after death. So far as I know, they are peculiar to this condition.

As regards the treatment for gas gangrene; many measures have been tried, and none found effective. Lawson and Whitehouse, two English surgeons, report 8 cures and 3 deaths in 11 cases treated by their method. This consists in undermining a zone of skin surrounding the extremity and well above the infected area, and injecting this area with neutral hydrogen peroxid at body temperature under pressure. At the same time, the infected area is incised, drained and treated according to general surgical principles. The use of a serum, the injection of oxygen under pressure with a large hollow needle directly into the tissues, proved of no avail. The best results were obtained by multiple incisions, which gave free drainage and undoubtedly aborted some incipient cases. In these cases, despite the large amount of drainage from the wounds, heavy dressings should be avoided in order to permit direct contact of the air with the wounds as freely as possible. When amputation has been decided on, it must be done high up and the wound left open. In five such case with amputation the patients recovered. In the malignant cases, in spite of every effort, the end came rapidly, preceded by delirium.

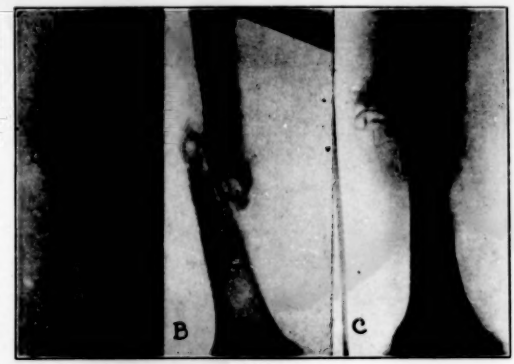

Fig. 6.—*A*, compound infected fracture of femur. Roentgenogram shortly after injury. Drainage perfect, extension not yet applied; *B*, fracture one week later. Drainage good, extension applied, by Dr. Blake's splint; very slight inflammation of ends of fragments; *C*, fracture one month after injury. Extension has effected good position. Drainage has prevented necrosis and loss of tissue, by maintaining nutrition.

The question of gas gangrene is one of paramount importance to the military surgeon, and as yet the last word on this subject is far from being said.

Secondary hemorrhage constitutes another complication against which one must guard. During my service, there were two deaths from this cause.

Joint injuries were common. Six cases of infected knee joint were seen, all of which recovered, drainage and extension being employed. In no case were the crucial ligaments cut, or the joint resected.

Of even greater interest are the compound fractures. One sees, sooner or later, practically every bone in the body broken. These fractures differ from those in civil life chiefly by the greater displacement of the fragments, greater splintering and comminution of the bones and the tendency toward limiting the injury to one bone where there are two in an extremity. Fractures of the extremities are very common, as might be expected from the high percentage of wounds received in these parts. It is in reality just these cases which tax the judgment and ingenuity of the surgeon, for they constitute the greatest problem seen at the base hospital. Needless to say, they are all infected.

Pathologically, a compound infected fracture may be compared to a common boil.[2] A boil comes from pyogenic organisms which have gained entrance and lodgment in the subcutaneous tissues. The infection takes place through some microscopic wound or an abrasion, and thus, in a sense, the wound has been for the moment compound. The germs grow and give off products of their activity, and the tissues, in their turn, react against them. The capillaries dilate, the blood stream becomes slow, leukocytes emigrate, some forming a protective barrier about the periphery of the inflammatory process, others destroying microorganisms by phagocytosis, and still others perish in the struggle and become partially distintegrated and go to form pus. Just inside the protective zone is a layer of innermost living cells, which I shall call the zone of nutrition. This zone is by no means stationary, for it fluctuates back and forth with barometric sensitiveness, as an index to the pressure within. It is this shifting zone of nutrition which concerns us most in these cases. Still further out is the zone of irritation, in which the circulation is increased, metabolism accelerated and the powers of repair heightened. If now proper drainage is established, that is, if the small boil is incised—a drop or two of pus escapes—tension is relieved by drainage. This allows the zone of nutrition to press in on the infected area, the necrotic tissue is removed and healing rapidly occurs.

If, on the other hand, drainage is not obtained, tension increases within, and the zone of nutrition is forced further and further back, with the result that the central portion of the now small abscess, loses its nutrition and dies. The living cells attack the necrotic mass at its periphery and cause an anatomic separation of the dead from the living. This central necrotic mass, the laity speak of as the "core." When the core is removed by incision, tension is relieved by drainage, the zone of nutrition encroaches on the abscess cavity and the wound is healed by granulating, the destroyed tissues being replaced by new connective tissues.

In compound infected fractures, it is exactly the same thing. Every such fracture constitutes an

2. For suggesting the pathologic similarity between a compound infected fracture and a boil, I am indebted to my friend Dr. Hugh Auchincloss of New York.

abscess cavity. The core, when it is made of bone, we call a sequestrum. The zone of irritation, with its increased powers of repair, we call the involucrum, and the zone of nutrition, or the innermost layer of living cells, is formed from the innermost layer of the involucrum.

If, in these cases, sufficient drainage is obtained and maintained, tension will not occur, and good nutrition of the fragments within the infected area will be assured. In this way rapid restoration with but little or no loss of tissues will occur. However, if drainage is poor or imperfect, tension will occur, the nutrition of the tissues will be impaired or destroyed, and the formation of a sequestrum with healing long delayed will result.

In operating on compound infected fractures, it is important,

1. To make large incisions; it is usually best to make the incision so that it will be dependent.
2. To remove all foreign bodies.
3. To remove all loose or detached pieces of bone. The fingers form a good guide to go by. All pieces that can be removed by the fingers without undue effort should be taken away.
4. To maintain drainage; this is best done by the insertion of large fenestrated rubber tubes.
5. To use absolutely no foreign material of any kind in the wound, such as wire, chromic gut or bone plates; the use of these means nothing but trouble.
6. As to the question of amputation, the tendency is rightfully more and more toward conservatism. Under favorable conditions, it is marvelous what nature will do in the repair of broken and infected bones. It is now possible to save limbs and restore them as useful members, whereas formerly it would have been considered entirely correct to amputate. If the economic status of the patient is not to be considered, the question of amputations becomes more and more identical with the question of the limb's viability. With the recent additions to our knowledge in the realms of bone grafting and transplanting, many wonderful results are being obtained.

Fig. 7. — Compound infected fracture of humerus, shell wound. Course complicated by typhoid fever. Drainage of upper fragment good. Large sequestrum of lower fragment, the result of insufficient drainage. Roentgenogram ten weeks after injury.

Fig. 8. — Illustrating tendency to fracture only one of two bones in same location. Upper third of ulna beginning to thicken, due to stimulation of zone of irritation. Ulna not injured.

The after-treatment of compound infected fractures consists in the maintenance of drainage and extension. Both are most important. Dr. Blake has advised a very simple and effective apparatus for extension of the lower extremity. It is much like a Thomas knee splint, resting above against the tuber ischii, the great trochanter and the pubic bone, and extending below well beyond the plantar border. He also made another such apparatus for use on the humerus. Both are made of metal, and can be bent in individual cases to permit of dressing wounds at any location.

The soldier permanently disabled, or injured so greatly as to prevent his return to the army, begins to turn his mind toward the pursuits of peace, toward industrial activity. So in just such cases do we find the surgical problems approaching those of everyday peaceful life. It is here that various plastic operations, repair of nerves, transplanting of bone and other tissues are finding a useful field. All Europe will soon be one great laboratory for such constructive surgery, and he who can will do well to avail himself of the opportunity.

XERODERMA PIGMENTOSUM

ITS TREATMENT WITH AUTOGENOUS SERUM *

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IOWA CITY, IOWA

In 1914, two children from Clarinda, Iowa, were sent to the asylum for the blind at Vinton, Iowa. Some time later they were referred to the University Hospital to be treated for weeping eczema.

Family History.—Their father, a carpet weaver, aged 37, was born in Iowa. His health has been good, no history being given of disease or injury before the children were born. Their mother, aged 34, was born in Missouri, and was always healthy. The father and mother are not related, and neither were married before. The mother has had no miscarriages and there is no history of carcinoma, mental disturbance or tuberculosis in the family.

Verdie F., a white girl 8 years old, did not attend school until last summer, at the asylum for the blind. As a baby she was healthy and stout, being undeformed at birth. There is no history of snuffles or adenoids. The present disease began when she was 2½ years of age. It first appeared on the face and limbs as little red spots.

On examination we find the child to be small for her age, fairly well nourished; hair is light colored, the scalp covered with scales. Her face is thin and pinched, the ears are atrophied and hard, the nose is drawn and pinched, the nostrils are flattened, the lips are thin and hard and cannot be everted without pain. The whole face has a shiny, almost a glazed appearance, with underlying telangiectases. The eyes are red, and show conjunctivitis and marked photophobia.

An irregular coalesced tubercle formation appears over the left eye, having almost the appearance of a tumor. It is elevated ¼-inch and is dark brown. Similar formations, but more wart-like and smaller, varying in size from a large pin head to a penny are on the forehead. They have scaly tops and are rough, and variable in color.

Five of these growths are on the forehead, one on the nostrils and two on the chin. The tumors are all located on

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

the face and head. The other parts involved, show a lentigenous or freckle-like pigmentation, and vascular telangiectases appear from the neck down to the buttocks, caused, probably, from the dress being open in the back. They also appear on the thighs, more profusely on the back than on the front. They are on both front and back of the legs, on the flexors of the feet, and some may be seen even on the toes. The arms show them on both extensor and flexor surfaces. They are on the front and back of the forearms, but on the back only of the hands. The lesions on these surfaces consist of superficial light areas and are scaly with an under pigmentation. They vary in size, and are flat on the surface. On the back of the hands the skin is beginning to take on a furrowed appearance. Conical patches occur which look like those of leukoderma and show no pigmentation. The skin seems to be attached to the underlying structures. The neck is slightly flexed, but rotation and extension are normal. There are no palpable glands. The pulse rate is 84, the temperature at times rises to 99. The lungs and heart are normal. The abdomen shows no pigment. The skin of the neck and face is difficult to pick

Fig. 1.—Appearance of eruption on front of body. Note elevated nodules on forehead of girl.

up; it is hard and stiff and firmly attached. The skin in other regions varies from normal elasticity to almost entire loss of it (Figs. 1 and 2).

The blood count shows whites 11,800, reds 4,980,000; polymorphonuclears 80 per cent., eosinophils 1 per cent., small lymphocytes 17 per cent., large lymphocytes 2 per cent.

The urine is normal. Microscopic examination shows epithelium but no blood cells, an occasional pus cell, no crystals and no bacteria.

Howard F., white boy, aged 6, began at the age of 2½ to show this disease. The lad is small for his age, and has a shrunken appearance. His legs and arms are small; his face seems to be drawn toward the midline. One is struck immediately by the hanging of the head and the spotted appearance of the face. The chin and the nose are small and angular. The hair is brown, dry and shaggy. The scalp is covered with white scales that are dry and very fine, and closely adherent.

Over the face, neck and ears there are freckle-like spots. The skin has a glossy appearance as if stretched, so that when the boy makes grimaces the skin pulls in fine folds about the neck and mouth. The face has three tints, pink, white and dark brown, which appear as if put on at different times, and cause a mottled appearance. The pigmentation extends entirely over the ears into the external meatus. He has continuous and marked photophobia. His eyes are small and sunken. There are no palpable glands. Freckles and telangiectases appear on the legs, arms, neck, face and ears with marked atrophy of the skin of the ears and face; in appearance he is an exact counterpart of his sister, except that he has no tumors and his back is not freckled.

Orpha F., the oldest of the children, had the same disease, which commenced when she was 1½ years of age, and,

Fig. 2.—Appearance of eruption on back and legs.

at its onset, had the appearance of sunburn. She had atrophic spots, conjunctivitis and photophobia, but no tumors. This child was deformed and an invalid all her life. She died at the age of 13.

One 4-year-old boy at home is healthy. The mother writes us that the children were no more exposed to the sun than her other children and is positive the disease began in the two living children as little red pimples, and in the first one attacked by it as a sunburn. At all events the disease is in locations accessible to the sun's rays.

Gross Pathology (by Dr. Dean).—The tumors removed from the eyelids of the little girl present the following appearance:

The specimen consists of two growths, one removed from the left eyelid and the other from the right. The growth from the left side measured 1.5 by 1.25 by 0.5 cm. It is reddish-gray, is firm and cartilage-like and its outer surface is nodular. The growth removed from the right side is

similar in size to the one described, but is thinner, appearing like a piece of skin with a roughened surface.

Microscopic Examination.—A section of the growth from the left side presents at some portions an irregular and unbroken epithelial border, the superficial layers of which are cornified and overlaid with an accumulation of polymorphonuclear leukocytes. At some points this epithelial border sends strands of epithelial tissue into the underlying structure. These appear as larger and smaller strands or islands, the centers of which show a concentric laminated arrangement of cornified epithelium which stains brightly with eosin. These epithelial islands are present in great numbers, but individually are small and occupy only a small part of the section. The tissue which intervenes between them is, to some extent, of a fibrous nature, but for the most part is made up of round cells, closely packed, sometimes shown in the form of cords of cells, but more frequently arranged in dense masses. Where the round cells are arranged in cords the intervening spaces present a fibrous appearance, which stains a bright blue with Lematoxylin. These round cells are a little larger than a red blood cell. The nucleus occupies nearly the whole substance of the cell. It is granular in appearance. Frequently mitotic figures may be seen. A section of the growth from the right side presents the same appearance as that described in connection with the left, but to a much less extent (Fig. 3).

From these findings we would make a diagnosis of squamous-celled carcinoma.

A microscopic section of the contiguous skin shows the superficial epithelium cornified and desquamating. Occasional points of thickening of the epidermis are noticeable by a bulging on its surface and more active cell multiplication in the lower layers. The corium is dense and more or less diffusely infiltrated by small mononuclear lymphocytes. The infiltration is more marked in the vicinity of the hair follicles and excretory apparatus. Small hemorrhages are seen here and there.

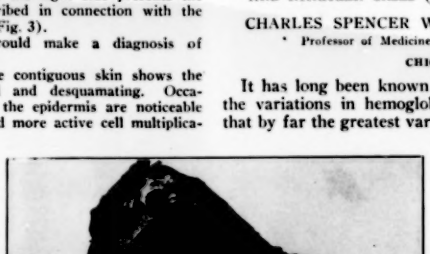

Fig. 3.—Section from nodule incised from eyelid of girl.

Diagnosis. — The appearance of the disease in early childhood, the six kinds of lesions present in the majority of cases, namely, lentigenous or freckle-like pigmentation, atrophic spots, vascular telangiectases, warts, superficial ulcerations and tumors render it unmistakable for any other disease. We were unable to find in the literature any form of treatment of this disease that promised a cure. At a venture we used autogenous serum, thinking it could do no harm. We gave the little girl five treatments and the lad six, at weekly intervals, with daily applications of theobroma to the skin. The general condition of the children has improved and they are gaining in weight. The improvement has seemed to result from the autogenous serum, so that if given in the beginning of the disease, I believe it would be highly beneficial.

I am indebted to Dr. Royce for the pathologic findings.

ABSTRACT OF DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: It is interesting to see these cases occur in family groups. They are like the family groups reported by Dr. Hyde several years ago; there are now several such families. That these growths are malignant and that the disease terminates fatally, is interesting. The disease is a type of carcinoma. Some of you may have seen the family group which was imported. One of those children developed a huge tumor in the orbit and died very soon. But we do have indigenous family groups in this country and they are interesting.

DR. J. B. KESSLER, Iowa City: The point I lay stress on in this paper was not what I did in these two cases, but what might be done if the cases had been taken in the beginning. The disease in the little girl had existed four or four and one-half years, and that of the little boy two and one-half years. He had not reached the tumorous stage, but had a growth on the cornea. I should certainly try this treatment if I got a case in the beginning. There was an apparent improvement, I did not say there was a cure; that could not be expected after it had gone as far as it had with these children.

INFLUENCE OF AGE AND SEX ON HEMOGLOBIN

A SPECTROPHOTOMETRIC ANALYSIS OF NINE HUNDRED AND NINETEEN CASES (PRELIMINARY REPORT) *

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It has long been known to those who have studied the variations in hemoglobin in the normal subjects that by far the greatest variations are those due to age. Our real knowledge of the age curve of hemoglobin begins with the work of Leichtenstern, who in 1878 published his results in a monograph entitled "Untersuchungen über den Hemoglobingehalt des Blutes in gesunden und kranken Zuständen." This author recognized very clearly that a precise knowledge of the variations due to physiologic conditions, especially age and sex, was an indispensable prerequisite for the study of the hemoglobin in diseased conditions. Leichtenstern's work was all done with the then newly discovered Vierordt's method, which was by far the most accurate method then available. This research extended into the estimation of the hemoglobin in a very large number of pathologic conditions, and the study of the variations due to age and sex was undertaken more or less incidentally.

Leichtenstern's results made it perfectly apparent that any comparative determinations of hemoglobin must take the age and sex factor into consideration, or else be grossly inaccurate. In spite of these results and in spite of the authority of their distinguished author, this research made almost no impression on the medical world at large, and but very little on the students of hematology. Even now, in such extensive monographs on the blood, as that of Grawitz, one finds

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

the age curve hardly mentioned, and the entire subject is often dismissed with the bare statement that all authors are agreed that the hemoglobin is highest at birth. Very few writers on clinical hematology seem to appreciate the fact that hemoglobin determinations on individuals of different ages, especially if young children be included, cannot be compared with each other without making a considerable error, if the differences due to age and sex be not taken into consideration.

Again, much of the work done on hemoglobin is nearly valueless because of the imperfection of the methods employed. None of the ordinary clinical methods are of sufficient accuracy to form the basis of a research, when standards are to be established. In many instances, too, conclusions have been drawn from an entirely insufficient material.

In spite of the early date at which the work of Leichtenstern was done his results have the best claim to accuracy, since the method employed by him, the spectrophotometric, was unquestionably even in the primitive form then in use, a very exact one. The original Vierordt apparatus used by him has since been supplanted by newer and better forms of spectrophotometer, so that this apparatus has now only an historic interest. The weak point in the work of Leichtenstern, aside from any shortcomings of the method used, is that he bases his conclusions, in many of his age periods, on an entirely insufficient number of cases. For example, he examined no babies on the first day of life, and his figures for the newborn up to the fourth day are based on the examination of only four infants, three male and one female, the youngest being only thirty-six hours old. In his comparison of the sexes we find his figures for the third-year males based on one case, and for the fourth-year males also on a single case. For the age periods 51 to 55, 56 to 60, and over 60, we find them based on a total of only five cases (for both males and females). He did not carry his age periods over 60.

A special incentive to the present research lay in the fact that no similar investigations have been made in America, and, therefore, we have up to the present no data bearing on American patients. In view of the inadequacy of Leichtenstern's material as a basis for formulating the age curve of hemoglobin, and especially since his results lack confirmation, it seemed a matter of importance that the entire subject should be investigated de novo, using the most accurate methods, on a sufficiently large and properly selected material. With these ideas in mind this research was begun early in 1914.

After a careful study of the methods at our command for the quantitative determination of hemoglobin, the spectrophotometric method was selected, since there is a practical unanimity of opinion that it affords a degree of accuracy and reliability not equalled by any other. The particular type of instrument selected was the Hüfner, in its latest model, as made by Albrecht of Tübingen. Even to one thoroughly familiar for years with hemoglobin determinations, it is highly important that a considerable amount of experience be attained with the instrument, if accurate results are to be had. To this end, we devoted some months of intensive work to preliminary investigations of the possible errors of the method, and to developing a definite technic which could be relied on to furnish results of a satisfactory degree of accuracy.

For placing at my disposal the facilities of the physiologic laboratory and for much advice in this preliminary work, I am indebted to the courtesy of Prof. George Dreyer, head of the department of physiology.

CONSTRUCTION AND CALIBRATION OF PIPET

It was sufficiently obvious from the study of Leichtenstern's technic that his method of obtaining the blood was faulty in two directions: first, the form of the pipet was such as to make it almost impossible to measure out with it the same amount of blood each time, the short and stocky build of the pipet rendering a slight error in the height of the column of blood of great importance; second, the capacity of the pipet was unnecessarily small, rendering accuracy in dilution difficult. In our preliminary study much experiment and thought were given to the question of a suitable pipet. We finally decided on one constructed of heavy walled thermometer tubing of very fine caliber, and yet of sufficient size that when filled with blood and held vertically, the column would flow down with a degree of rapidity most suitable for accurate measurement.

Experiments were made to determine how much blood could be readily obtained, without undue squeezing, from an incision in the finger, and the length of the pipet was so chosen as to contain approximately this amount. In its final form, then, our pipet was a piece of heavy thermometer tubing about 7 inches in length so drawn out at the tip as to constrict the opening to the least possible extent, with a fine mark around it about 4 inches from the tip, to mark the desired length of the blood column. Three calibrations of this pipet were made as carefully as possible and the weight of blood delivered by it was found to be 0.03865 gram. The specific gravity of the blood was determined with two different pyknometers, and found to be 1.0601 and 1.0597 respectively, the average being 1.0599. The volume of blood delivered by our pipet was, therefore, 0.03646 c.c.

A further check of the accuracy of the calibration of the pipet was made in the following way: One pipetful of blood was added to 4 c.c. of 0.1 per cent. sodium carbonate solution, giving a dilution of 1:110,709. Similarly to 1 c.c. of blood sufficient sodium carbonate solution was added to make the same dilution. These two dilutions were then compared spectrophotometrically. The results of the comparison are shown by the following extinction coefficients:

Solution 1.—Extinction coefficient 1.340
Solution 2.—Extinction coefficient 1.336

In making all our routine dilutions a Mohr normal 5 c.c. pipet was used, and in the comparison of our pipet a Mohr normal 1 c.c. pipet and a normal buret were used, all bearing the standardization mark of the German *Reichsanstalt*. In the foregoing matters I was rendered invaluable aid by Professor Welker, to whose kindness I am indebted for the construction and calibration of the pipet, and to whose advice and skill the accuracy of this part of the work is entirely due.

METHOD OF OBTAINING AND DILUTING THE BLOOD

From the middle finger of the left hand, or from the lobe of the ear in the case of young infants, a large flowing drop of blood was obtained by sticking deeply with a cataract knife. From this drop was readily obtained sufficient blood to fill the pipet to a

point a little above the mark, and then with the pipet held vertically, the column of blood was allowed to sink down exactly to the mark, and the excess of blood on the tip wiped off with the thumb and finger. The contents of the pipet were blown into 4 c.c. of 0.1 per cent. sodium carbonate solution, which had previously been measured with a Mohr normal pipet into a long-neck glass-stoppered flask of 50 c.c. capacity. In the case of infants under two weeks, in which the hemoglobin values are very high, 5 c.c. was used in order to bring the dilution into the most suitable region of the spectrum. By graduating our pipet as a delivery pipet, and by always blowing with maximum force for ten seconds, withdrawing the tip of the pipet from the fluid while still blowing, it is believed that a very high degree of accuracy was obtained. The diluted blood was now thoroughly oxidized by shaking, and was transferred to the "trögchen" of the apparatus and covered with a heavy piece of glass to exclude atmospheric influences. With the sector set at the proper position (542.0 to 534.0) ten readings were taken, five on each side of the vermier scale. In every case readings were also taken in the region between the bands (566.5 to 558.5), so that in each and every observation, it was perfectly certain that no deterioration of the blood from any cause had taken place, since any variation in the constancy of the ratio of the extinction coefficients from these two readings would disclose this at once. We regard this as a by no means superfluous caution, since in several instances it happened that, for one cause or another, some deterioration had occurred, and this was at once disclosed, the observation rejected, and new dilutions of blood were made and readings taken of these.

THE PRINCIPLE OF THE QUANTITATIVE DETERMINATION OF HEMOGLOBIN BY THE SPECTROPHOTOMETER

Vierordt in 1873 and Hüfner in 1894 developed the method. The former showed that for one and the same colored substance the ratio $\frac{\text{concentration}}{\text{extinction coefficient}}$ is a constant, which he named "absorption ratio, A." In the case of blood, the concentration, C, is the number of grams of HbO_2 in 1 c.c. of the solution. The extinction coefficient is the reciprocal of that thickness of the absorbing body, by which light of the intensity 1 is reduced to the intensity one tenth. If E is the extinction coefficient, and T the thickness of the layer which reduces the light to one tenth of its original value, then E is equal to $\frac{L}{T}$. If the thickness of the layer remains constant, as in the Hüfner apparatus, E can be determined by measuring the intensity of the remaining light. This is done by rotating the analyzer with respect to the polarizing Nicol. It can be shown that the extinction coefficient, E, is equal to -2 log cos O, where O is the angle of rotation. In order to obtain E, we have only to measure the angle of rotation, O, necessary to produce equality in the two fields, and from this value E is readily calculated. For one and the same coloring matter, and for the same spectral position, different concentrations are directly proportional to their respective extinction coefficients, so that the latter give a convenient way of expressing the relative concentrations. To obtain absolute values all that it is necessary to do is to prepare a solution of known strength, determine E, and the quotient $\frac{C}{E} = A$, or $C, = E\ A$. This was done by Hüfner for oxyhemoglobin for the spectral region 531.5 to 542.5. He found A to be 0.001312. Butterfield found A to be $1.18.10^{-3}$ for the region 533.5 to 542.0.

The instrument used by us was the newest model Hüfner apparatus, a detailed description of which is unnecessary. The instrument was used in a dark room, especially fitted up for the purpose, and in addition to this enclosed in a large light-proof hinged box, so arranged that when closed during the readings nothing but the telescope tube was visible from the outside. In this way ideal conditions were obtained with practically absolute darkness. A properly centered Welsbach was the illuminant. The collimator slit was set at 0.05 mm. and remained at that width during all the work. The eye-piece slit was set at a width of 8. The calibration of the sector scale was carried out in the usual manner, so that the reading of this scale could be converted into wave lengths. In addition to this calibration we determined the degree of absorption for the entire area between the bands as well as in the band itself, thus assuring ourselves that the positions in the spectrum actually represent the position of minimum and maximum absorption. These positions fixed, and the ocular slit properly and symmetrically adjusted, the apparatus was ready for the actual determinations.

RESULTS OF EXAMINATIONS

Age	Extinction Coefficient Dilution 1: 110.71			Number of Cases		
	Male	Female	Both	Male	Female	Total
1 day	1.7879	1.7763	1.7813	16	15	31
2-3 days	1.7229	1.7657	1.7454	15	16	31
4-8 days	1.6865	1.6936	1.6949	15	18	33
9-13 days	1.6266	1.6342	1.6355	15	15	30
2 weeks-2 months	1.4229	1.3822	1.4109	15	15	30
3-5 months	1.0019	1.0015	1.0467	16	16	32
6-11 months	1.0129	1.0876	1.0499	18	15	33
1 year	0.9763	0.9367	0.9571	18	16	34
2 years	0.9530	0.9727	0.9631	16	17	33
3 years	1.0121	1.004	1.008	15	16	31
4 years	1.0177	1.071	1.0455	16	15	31
5 years	1.0396	1.0166	1.0375	17	18	35
6-10 years	1.1103	1.0458	1.0861	18	15	33
11-15 years	1.169	1.1390	1.1252	17	20	37
16-20 years	1.2879	1.1986	1.2447	16	15	31
21-25 years	1.3203	1.1515	1.227	17	21	38
26-30 years	1.2572	1.1895	1.2169	19	28	47
31-35 years	1.2975	1.1822	1.2403	16	16	32
36-40 years	1.3008	1.1771	1.2428	17	15	32
41-45 years	1.2913	1.1981	1.2432	15	16	31
46-50 years	1.2880	1.1866	1.2568	22	15	37
51-55 years	1.2963	1.2523	1.2987	19	16	35
56-60 years	1.300	1.2074	1.2537	15	15	30
61-65 years	1.2612	1.2033	1.2313	15	16	31
66-70 years	1.2405	1.1880	1.2139	17	15	32
71-75 years	1.1611	1.1848	1.1723	19	17	36
76 and over	1.2003	1.1349	1.1793	30	23	53
				464	455	919

ACCURACY DETERMINATIONS

A considerable number of accuracy determinations were made not only before beginning the actual work, but also from time to time during its progress, in order to determine the effect of an increasing amount of practice. The procedure employed was the following: A pipetful of blood (defibrinated) was diluted with 4 c.c. sodium carbonate solution, and the pipet was then cleaned and dried in the usual way. A second sample of the same blood was taken, and similarly diluted in a second flask. After shaking, the diluted blood was transferred to the "trögchen" and ten readings taken, five on each side, in the usual manner. The same "trögchen" was used, after cleaning, for the second dilution. The extinction coefficient of each sample

was then calculated. Two typical determinations made in this manner are given below.

	Solution A Extinction Coefficient	Solution B Extinction Coefficient
No. 1	1.259	1.253
No. 2	1.393	1.399

In order to test the possible deterioration of the blood solution on standing, three separate dilutions of the same specimen of defibrinated blood were made, and tested spectrophotometrically, the first immediately, the second a half hour later, and the third two hours later. The subjoined extinction coefficients show the results that were obtained, and make it manifest that under our conditions of experiment no deterioration of the blood occurred within two hours. Under the conditions then in which we worked the method leaves nothing to be desired in the way of accuracy. The extinction coefficient of No. 1 (immediately) was 1.300; of No. 2 (one hour), 1.290; of No. 3 (two hours), 1.297.

It should be especially noted that these accuracy determinations were made with the same number of readings and under precisely the same conditions as all the rest of the determinations, so that they represent the accuracy really attained, and not merely that which is possible under especially favorable conditions.

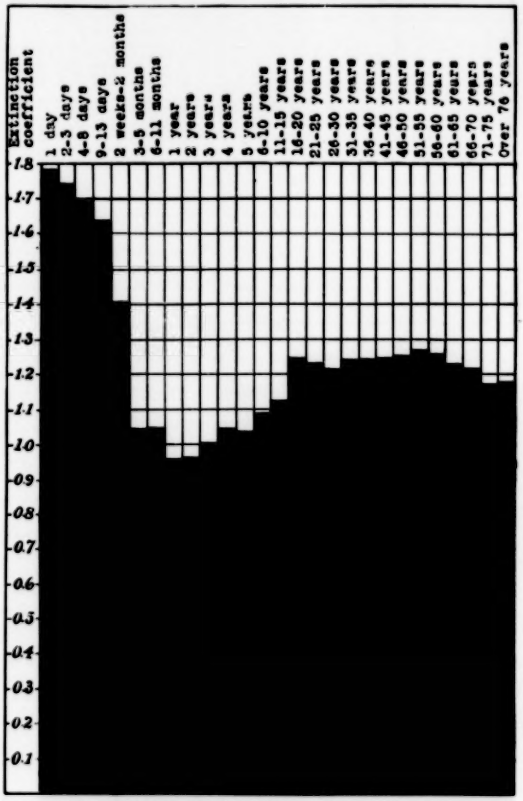

Fig. 1.—Curve showing influence of age on hemoglobin percentage.

MATERIAL USED

Our material was selected with the greatest care, every effort being made to select strictly normal healthy individuals. Particularly in the babies all children were excluded that were not thriving and gaining weight in a normal manner. The great majority were breast-fed babies. In one group of children, out of forty-one supposedly healthy normal children but nineteen were accepted as complying with our requirements. Care was taken, as will be seen from the table, to have approximately the same number of cases in the various age periods selected for study, and again to have these evenly divided between the two sexes. The number of individuals available at all ages was sufficiently large to make it a fairly simple matter to reject all unsuitable material. On the other hand, no attempt was made to select individuals of phenomenal development or strength, but rather to select individuals from all walks of life so as to make the cases selected a fair average. For the ages from 10 to 30, schoolchildren and college students made up a considerable portion of the material, and these cases were, for the most part, studied early in the fall, just after the close of the summer vacation, at a time when their physical condition was presumably at its best. In all, 919 individuals were examined, and the accompanying table shows the results.

CHARACTERISTICS OF THE AGE CURVE

Our results agree with those of other investigators, in that the hemoglobin value is greatest at birth. The decline begins at once, and is very rapid, so that by the fifth month the average value is nearly down to the minimum (about ten seventeenths of the value at birth), and is far below the average adult figure. From the fifth month onward there is a progressive, but very slow diminution, but the actual minimum is not reached until one year, that is, in the second year of life. There is a fairly rapid rise up to the sixteenth year, and from the sixteenth year onward the variations in the different periods are relatively small. The rapid decline in the amount of hemoglobin during the first five months is a highly characteristic feature of the age curve, and in this our results are in perfect accord with those of Leichtenstern. This decline is quite independent of nutrition, since, as stated, the greatest care was exercised to select only infants that were thriving. Moreover, it is not a question of artificial feeding, since the great majority of our cases, especially up to the sixth month, were breast-fed infants.

A noticeable feature of our curve is the fact that in the period from 16 to 20 years the values have attained practically the maximum, and from this time to middle age the curve is nearly horizontal. The very highest point is attained in the 51 to 55 period, but the variation in this period from the other adult ages is insignificant. From the fifty-fifth year onward the values decline, and it is noteworthy that there is a slight rise from 76 onward in the case of the men, while the decline continues in the case of the women. The sharp drop found by Leichtenstern from 55 to 60 is seen, on the basis of our larger number of cases, not to exist. The rise in old age found by him was based on only five cases in all, whereas our figures for the patients over 76 alone is based on a total of fifty-three cases.

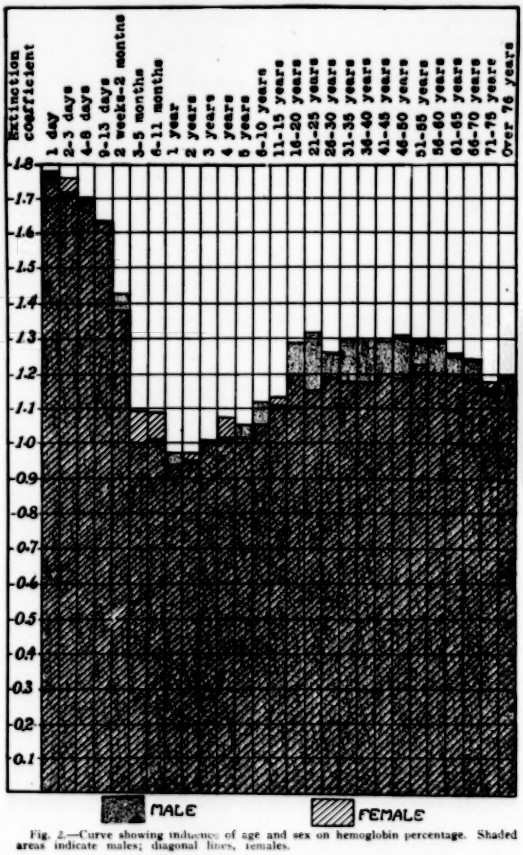

Fig. 2.—Curve showing influence of age and sex on hemoglobin percentage. Shaded areas indicate males; diagonal lines, females.

INFLUENCE OF SEX

It will be evident from the study of Curve 2 that the values up to the fifteenth year are almost precisely the same for both sexes. At birth the difference is so slight as to be difficult to portray graphically on our curve. It should be borne in mind that the figures on which the values for each sex are based represent only one-half the total number of cases, hence small variations are somewhat more likely to occur in these curves than when the figures for both sexes are combined in a common curve. One especially valuable observation was made on twins, a boy and a girl, both perfectly healthy, of approximately the same weight, whose blood was first examined when they were 5 hours old. The values were almost identical. In order to formulate more precisely the relative values for the two sexes up to puberty, we have calculated the average extinction coefficient for each sex separately. They are as follows:

From birth to 15 years the average extinction coefficient in males was 1.236; in females, 1.255.

It is evident from these averages that the variations which are due to sex are, up to the sixteenth year, scarcely greater than the error of the method, and that they are entirely negligible, from the practical standpoint.

From the sixteenth to the seventeenth the sex difference make themselves plainly manifest.

While there is comparatively slight variation for either men or women in these periods, the values for the women are in every instance considerably lower than those for the men.

It should be especially noted that from the fiftieth to the seventieth year, that is, after the cessation of menstruation, the differences between the two sexes still exists, although to a somewhat less degree than during the period of childbearing.

From 16 to 60 years the average extinction coefficient in males was 1.296; in females, 1.190.

From these figures it will be seen that from the ages of 16 to 60, inclusive, the hemoglobin of the two sexes varies decidedly, in the proportion of 1.296 to 1.190, or otherwise expressed, the females averaging 91.7 per cent. of the values of the males.

From 61 to 70 years the average extinction coefficient in males was 1.250; in females, 1.196.

From the figures given above, it will be seen that in the decade from 61 to 70, inclusive, the females still show lower values than the males in the foregoing proportion.

Expressing this proportion as a percentage, the females have 95.6 per cent. as much hemoglobin as the males.

Over 71 years the average extinction coefficient in males was 1.185; in females, 1.166.

It is thus seen that beyond 71 the values for the sexes so come together as to be practically identical.

BEARING OF THE RESULTS ON THE CLINICAL DETERMINATION OF HEMOGLOBIN

An inspection of the curves will make the following points perfectly evident.

1. No instrument which is graduated in percentages of a supposed average normal individual can be utilized for making determinations at different ages without correction.

2. For the period of life from 15 to 70 years the same instrument cannot be used for determinations in both sexes without correction.

3. In order to make the comparison of results possible, it is imperative to use an instrument which reads in absolute terms, that is, which expresses its results in grams of hemoglobin per hundred c.c. of blood.

4. By comparison of the figures obtained from a given determination with the average for that age and sex, as shown by the table, an accurate idea can be had as to the actual deviation from the normal in the particular case in question.

One or two simple examples suffice to illustrate these points. Let us say that a mother who is 22, and a father who is 24, and two children, a boy of 1 year, and a girl of 2 years, respectively, all being average normal individuals, have their blood examined with any one of the instruments which is graduated on the basis of an average normal adult. An inspection of the table with reduction to percentages will make it evident that the values will be, father 100 per cent., mother 87 per cent., boy 1 year 74 per cent., girl 2 years 74 per cent. It thus appears that the mother is anemic to the extent of 13 per cent. and that both children are markedly anemic, to the extent of 26 per cent. This is assuming that the instrument is graduated so that the father shows 100 per cent. The fact is that the mother and both children have the amounts of hemoglobin which they should have for their respective ages and sex. The anemia is merely apparent, and due to the fact that the hemoglobinometer was not calibrated to read in absolute terms, and that the physician did not take the age and sex variation into consideration.

As regards the accuracy of calibration of the various hemoglobinometers in common use, the only point we wish to make is that it is extremely difficult to compare them with each other, since in many instances no statement is given as to what standard was used by them. Assuming that a given instrument has been properly standardized, as for instance by the spectrophotometric method, its scale should be so arranged as to read in grams of hemoglobin per hundred c.c. of blood. For ordinary clinical purposes it is, of course, quite unnecessary, even were it practical, to use so delicate an instrument and one requiring so much preliminary study as the spectrophotometer. Most of the better class of instruments will be fairly satisfactory as regards their ability to detect variations of sufficient amount to be clinically important. Their unsatisfactory character lies in the fact that the basis of standardization is an unsatisfactory one, since there is no such thing as a perfectly normal individual, with a particular concentration of blood, to which the concentration of all normal blood at all ages should conform. Whatever hemoglobinimeter is used it must read in absolute terms, and clinicians must accustom themselves to the variations in hemoglobin at different ages, and to the allowance for sex at certain periods.

ABSTRACT OF DISCUSSION

DR. THOMAS ADDIS, San Francisco: Dr. Williamson is to be congratulated on the accomplishment of this work, which is of fundamental importance, both from a physiologic and a clinical point of view. I should like to ask him two questions: first, what degree of variation he finds in adults in the different age groups, and second, whether he has any evidence that alteration in blood volume is an important factor in the variations of hemoglobin concentration at different ages?

DR. CHARLES SPENCER WILLIAMSON, Chicago: The question of Dr. Addis is quite appropriate, and I have touched on it in the full report. As I must speak from memory, it is hard to say just what the variations are, but I can indicate them more or less approximately. At birth the variations are 10 or 12 per cent., and in adult life perhaps as much as 15 per cent. The greatest variations are from 3 to 5 months, when they occasionally reach 16 or 17 per cent. The smallest variations occur in old people. As one gets past 70, for instance in institutions, the uniformity of the blood is remarkable.

I remember going over to the Jewish Old People's Home and getting several samples. I thought I had measured the first blood a second time, which was not possible because we had only sufficient blood in a sample to make a single examination. In the entire number from that institution there was not 5 per cent. variation. The variations in the prime of life, from 50 to 60, are moderate. The greatest variations are from 2 or 3 months to 1 year of age. This paper is intended as a preliminary report, but in the complete paper I shall append to these tables the variations in each group. I feel that having now acquired a standard, we are in position to say whether an individual in a given group is normal. As to speculation, I hope to carry on a few experiments, taking strong normal breast-fed infants who have low hemoglobin compared with adults, and then with iron see if we can make their blood increase in hemoglobin. For it is recognized that the blood will only take up a definite amount of iron. The low values found in children in this investigation have nothing to do with undernourished children. I have been at considerable pains comparing the thriving normal children from certain institutions with big, strong, sturdy children in private practice, and I have found these institution children average just a little more than the children in private practice. That was a distinct surprise to me, and were it not based on so many cases I would be inclined to call it into question.

Notification of Venereal Disease in Norway.—The London *Lancet* quotes from an article by Y. Ustvedt in the *Tidsskrift for den Norske Lægeforening*, 1915, that venereal disease is notifiable in Norway, and during 1914 just over 2,000 cases of gonorrhea and syphilis were reported in its capital, Christiania, which has a population of about a quarter of a million inhabitants. The notification is made by medical practitioners and hospitals, and over 23 per cent. of those notified were males; over a third of all the notifications were made in the month of December, June being the month with the next largest number of notifications. There were 556 cases of syphilis, and it is noted that the infection was extragenital in 20 of these, 6 males and 14 females, the tonsils or lips being the seat of infection in 11. There were 38 new cases of congenital syphilis, and it is recorded that a special hospital for the treatment of this condition, with 20 beds, was opened in 1914 by the Oddfellows' Lodge of Christiania. It appears that in only 78 cases was the infection acquired in some other town, a low proportion in a harbor visited by so many seamen as Christiania. In 78 instances evidence as to the source of infection was given, sufficiently definite to cause special inquiry to be made, and in 60 of these the inquiry gave a successful result. The law allows punishment up to three years of imprisonment to be given to any person who exposes another to venereal infection while knowing or suspecting that he or she has venereal disease himself or herself; 9 men and 18 women were prosecuted under this law, and 2 of the men and 7 of the women were convicted.

TUBERCULOSIS OF THE FRONTAL SINUS

REPORT OF TWO CASES *

JEROME B. THOMAS, A.B., M.D.

PALO ALTO, CALIF.

Tuberculosis of the frontal sinus, judging from the published reports, is an extremely rare disease, only five cases having been reported at the present date. Tuberculosis of other nasal accessory sinuses is relatively more common but is likewise rare, though in recent years observations increase rapidly to the effect that a large proportion of cases of chronic sinusitis occur in the tuberculous though the sinus discharge may not contain the tubercle bacillus. In this connection Hajek[1] remarks that it is likely the tuberculous lymphatic constitution disposes to the chronicity of empyema and that postmortem findings agree with this experience, proving the relatively frequent occurrence of accessory sinus inflammation in the tuberculous. Gleitsmann[2] and Collet[3] have collected from several authors the reports of 310 postmortem examinations of tuberculous cadavers, in ninety-one of which there was found accessory sinus disease. As to tuberculosis of the accessory sinuses recognized in the living, Collet[3] remarks that it is a rare disease and that only thirty observations are known. To these Doerner[4] has recently added four more, bringing the total up to thirty-four.

PATHOLOGY

It is generally agreed that tuberculosis of the sinuses is secondary, in practically all cases, to a general tuberculosis, or localized tuberculosis of neighboring parts, or to both. For example, Gleitsmann, in a study of the reports of twenty cases of tuberculosis of the maxillary antrum, found that twelve followed tuberculous lesions of the nose, or upper maxilla, and that the majority of the patients suffered from pulmonary tuberculosis. In only eight of the twenty were tubercle bacilli demonstrated in the antral secretion.

Perforation of the sinus walls as a rule occurs during acute attacks of sinusitis, with damming back of discharge, pressure necrosis, and thrombosis of the small vessels. Osteomyelitis, or infection of the orbit or cranium may follow. In cases of long duration exuberant granulations, pus, cheesy and necrotic masses are usually present in abundance. Sections of the affected mucous membrane may show typical tubercles and giant cells.

With this preliminary reference to the subject of tuberculous sinusitis in general, I shall describe briefly the five cases of tuberculosis of the frontal sinus hitherto published, before reporting my own two cases, and thus make a complete record of the subject up to the present time. I take these data from the original reports, with the exception of Panse's case, which I take from Gleitsmann's excellent review.

Panse's[5] case: This was in a 16-year-old girl, who had been operated on several times for nasal polypi. One month after the last operation she suddenly became blind. Antiluetic treatment was negative. The frontal and sphenoidal sinuses were opened and necrotic bone removed. No tubercle bacilli were found in the sinus contents, but giant cells were found. Later a more extensive operation was performed on all sinuses. A short improvement was followed by death.

Necropsy revealed tuberculosis of the apex of the right lung, cervical and bronchial glands; destruction of optic nerve, and a tuberculous cheesy focus in the left parietal bone.

Frank and Kunze's[6] case: The patient suffered repeated attacks of acute frontal sinusitis for about a year, ending with swelling over the frontal sinus. The diagnosis was based on the family history, on the general tuberculosis of the patient, the character of the cheesy masses found in the sinus, and the cheesy foci in bone. The wound of operation healed completely in eighteen days.

K. Vohsen's[7] case: The patient was a woman, aged 47, who had nursed her tuberculous son during his long, fatal illness. She had attacks of frontal pain, but no intranasal signs. After three years of severe frontal headaches, a fistula appeared in a small, depressed scar over the left frontal prominence, the result of an injury during childhood. The fistula was found to connect with the frontal sinus full of cheesy masses; the walls were carious. The sinus was "curetted." There was no more frontal pain, but she died of pulmonary tuberculosis one year later.

H. Schenke's[8] case: The patient was a boy, aged 18. He had tuberculous glands and chronic tuberculous otitis media. A small swelling slowly developed over the upper part of the left frontal sinus. He had headache and a discharge of pus from the nose, also diplopia. A mastoid fistula was found and curetted. Operation on the frontal sinus showed destruction of the anterior wall, cheesy masses, and pus rich in tubercle bacilli. The left frontal sinus was wanting. Death occurred in a few weeks. Necropsy revealed an abscess of the left mastoid process extending into the cranial cavity by way of the occipital foramen.

This case may be fairly considered one of primary tuberculous bone involvement.

D. Doerner's[4] case: The patient was a woman, aged 31, with complete obstruction of the left naris during eighteen months, and left frontal headaches. The left naris was filled by a grayish-red mass, easily bleeding. Cheesy masses were washed from the antrum. There was an old healed lesion of the apex of the left lung. Wassermann's test was negative. A small fistula was found over the tear-sac. All sinuses and the septum nasi were involved; the diseased portions were removed by a very extensive operation. The mucosa of the frontal sinus was covered with fungoid granulations. Pain and nosebleed ceased. Recovery occurred in a short time, and there was no recurrence of the disease at the time the case was reported, seven months after operation.

REPORT OF AUTHOR'S CASES

CASE 1.—Chronic frontal sinusitis, with perforation of the outer table in which operation was followed by recovery. The patient, Mrs. N. A. B., aged 47, attended her mother during the last years of a slow phthisis.

Previous History.—Both mother and grandmother died of tuberculosis. In 1899 the patient bruised her right, big toe against a door. This was followed by pain, inflammation and chronic suppuration, which was ended after ten months' duration by resection of the terminal phalanx of the toe.

The patient had Pott's disease of the spine at the junction of the dorsal and lumbar region, during 1901, and wore a spinal brace from January to June, 1902, after which she

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

1. Hajek, H.: Pathologie und Therapie der Nebenhöhlen der Nase, 1909, pp. 10 and 414.

2. Gleitsmann, J. W.: Tuberculosis of the Accessory Sinuses of the Nose, Laryngoscope, 1907, xvii, 445. Gleitsmann's paper contains a bibliography on the subject up to 1907. I have appended to my report references to papers that have appeared since 1907 and a few previous to that date, collected by Collet an I not given by Gleitsmann. For the sake of making my report complete, I have included the four titles of papers on tuberculosis of the frontal sinus, which appeared also in Gleitsmann's bibliography.

3. Collet, M.: Tuberculose des sinus de la face, Lyon chir., 1912, viii, 518.

4. Doerner, D.: Ueber Tuberculose der Nasennebenhöhlen, Arch. f. Laryngol. u. Rhinol., 1913, xxvii, 446.

5. Panse, R.: Ein Fall von Kiefer und Keilbein Tuberculose mit tötlichen Ausgang, Arch. f. Laryngol. u. Rhinol., 1901, xi, 478.

6. Frank, J., and Kunze, S.: Tuberculosis of Frontal Sinus, New York Med. Rec., Nov. 3, 1894.

7. Vohsen, K.: Durchleuchtung der Highmonshöhle und des Sinus Frontalis zur Diagnose ihrer Erkrankungen und Operativen Behandlung, Verhandl. X internat. Med. Kong., Berlin, 1890, iv, Part 12, p. 33.

8. Schenke, H.: Ueber die Stirnhöhlen und ihre Erkrankungen, Dissertatio, Jena, 1898.

spent a year in bed. A psoas abscess of the left side was opened about May, 1904, and continued to discharge for two months. No further manifestations of Pott's disease occurred except the resulting spinal deformity. She had a severe cough and was much emaciated at the time of the attack of Pott's disease.

In May, 1912, about four months before consulting me, the patient suffered severe pain in the midfrontal region, a little to the right of the median line, which was followed and relieved by a mucopurulent discharge from the right nostril.

Sept. 16, 1912, there was an acute outbreak of the frontal sinusitis with fever, severe pain, edema of the lids, and a red, tender elevation about 2 cm. in diameter, in the center of the forehead. The patient had borne the pain for several days and permitted the inflammation to extend, rather than submit to operation.

Operation.—Sept. 21, 1912, the right frontal sinus was opened at its nasal third and a large amount of thick mucous membrane and debris was curetted from the sinus and nasofrontal duct. The outer table of the frontal bone was perforated by an erosion about 1 cm. in diameter. The edges of this were curetted. Drainage was maintained through the nasofrontal duct, and a tube was inserted from a counter opening in the skin over the frontal erosion down through the inner angle of the wound.

This operation was soon found to be insufficient, and the only excuse for stopping short of a radical resection was a desire to avoid extensive deformity of the patient's face, and the hope that all the diseased tissue could be removed through a small opening into the sinus.

Second Operation and Result.—After several months of comparative comfort, during which, however, there continued a chronic discharge from the wound, in January, 1913, I operated after the method of Kuhnt, making a vertical incision in the center of the forehead from the inner end of the horizontal incision, up to the area of bone destruction, and dissecting back a triangular flap of skin and soft parts. Most of the outer wall of the right sinus was removed and all remaining mucous membrane lining the sinus was curetted away. The sinus was very large, extending from 2½ to 3 cm. above the supraorbital arch and outward nearly to the external angular process of the frontal bone. There was no communication with the left sinus, which transillumination showed to be equally large, but clear and bright. No further destruction of bone had occurred since the first operation; there was, however, an effort at repair about the curetted edges of the perforation. All other walls of the sinus appeared healthy after removal of the mucous membrane. The wound was packed open with iodoform gauze and allowed to heal from the bottom.

At the end of two months the sinus was filled with healthy granulations, except a few large flabby ones at the inner angle of the wound. The scar was depressed at the inner and lower angle; but there was surprisingly little deformity, considering the extent of the tissues removed; a plastic operation would doubtless lessen the deformity still more. A few drops of pus discharged at times from the inner angle.

At the time of writing (May, 1915) the patient is in good general condition, is of normal weight, and the fistula at the lower angle of the scar over the sinus has been closed for about eighteen months. A small quantity of mucopus drains daily from the anterior ethmoidal region into the right naris. No tubercle bacilli were found in the discharge, of which about 10 c.c. have been examined by the antiformin and sedimentation method.

To make the operation a complete success a submucous resection of the nasal septum, with removal of some of the anterior ethmoidal cells should be done, but has not been urged because the patient feels well, does her daily work with comfort, and has only a slight nasal discharge.

There was no history of lues in this case, and a Wassermann blood test made in January, 1914, by a competent pathologist was practically negative; a suspicious reaction in the most sensitive tube being explained by the anticomplementary condition of the blood specimen.

No animal inoculation with pus from this case was made; but in view of the family history of the patient, her previous attacks of wasting cough and chronic bone disease, the negative Wassermann, and the character of the material curetted from the sinus, I believe we are justified in regarding the frontal sinusitis as a tuberculous process.

CASE 2.—Tuberculous frontal sinusitis, with osteomyelitis, epidural, subdural and cerebral abscesses resulting in death, a necropsy being held.

The patient, J. V., a man, aged 30, consulted me March 24, 1913, for frequent pains in his temples and in the frontal region, occurring at shorter intervals during the past five months. An extensive intranasal operation was done two years ago.

Present Condition.—No tenderness on pressure or tapping over frontal sinuses exists now, but this sign was present several days ago. Temperature 101, pulse 120. He is pale and thin but has no nausea or vertigo.

Nasal Examination.—Offensive pus exuded from both middle and upper nasal fossae. Both middle turbinates had been resected, and there was a large hole in the nasal septum. Polyps were seen at the entrance to each nasofrontal duct. Both antrums and frontal sinuses were very dark on transillumination, and there was a probable pansinusitis. The patient refused to submit to further operations and returned to his home. I saw him a few times with his family physician, from whose notes I take the balance of the history.

The patient had advanced pulmonary tuberculosis. A Wassermann blood test, made March 26, was negative.

April 4 to 7: Temperature 98.8 to 101.8. Severe frontal headache is present. An abscess is pointing in the frontal region. A large quantity of pus is discharged daily from the nose.

April 8: The patient is sweating, and has noisy delirium.

April 10: The frontal abscess has been incised.

April 19: The temperature ranges from 97 to 100.4. There is headache and swelling over the left ear.

May 6: The first convulsion, lasting seven minutes, occurred.

May 7: Six convulsions occurred during the night, from 5 to 25 minutes apart. There is right hemiplegia.

May 8, 9 and 10: Temperature from 101 to 102.8. Convulsions occurred every few minutes, lasting from one-half to five minutes.

May 11: Death.

A guinea-pig was inoculated with pus from the frontal abscess, incised April 7, with positive results, a postmortem examination of the animal, revealing marked general tuberculosis.

Necropsy.—At necropsy, May 12, only a partial cranial resection was permitted. The anterior bony wall over the left frontal sinus and over one-third of the right sinus was entirely destroyed, leaving an opening in the frontal bone about 5 by 7 cm. No vestige of bony septum existed between the sinuses. Extensive erosion of frontal bone was found, extending from the edges of the opening. All the posterior bony walls of both frontal sinuses were destroyed, except two thin, sieve-like sequestra from 12 to 18 mm. in diameter, adhering to the meninges, islets of soft bone in a lake of pus. Pus had burrowed under the scalp back to the left parieto-occipital region. The meninges were very thick. On opening the dura, there was a large amount of pus on the surface of the left frontal lobe; the dura was not adherent to the surface of the brain. After wiping away the superficial pus, from 60 to 100 c.c. welled up from a deep incision into the left parietal lobe. No communication was found between the epidural and the subdural spaces.

CONCLUSIONS

There are several factors that tend to protect the frontal sinus from tuberculous infection, including such common factors as the cilia, mucus, tears and the bactericidal action of the mucous membrane, supplemented by the high position and natural drainage of the frontal sinuses. However, a study of the statistics of sinus disease observed in bodies dead of

tuberculosis strongly suggests the probability that tuberculous sinusitis does occur much more frequently than it is recognized.

The diagnosis depends on careful bacteriologic examination of the sinus secretion in suspected cases, securing as large a quantity of secretion as possible and using sedimentation. The so-called antiformin method is a good one. Animal inoculation should be resorted to if the simpler methods fail, care being taken to remove the secretion directly from the sinus if possible, to avoid accidental tubercle bacilli present in the nose.

Tuberculin may serve as a valuable diagnostic aid, though I have seen no reference to its use for that purpose.

In more advanced forms of tuberculous frontal sinusitis, the middle turbinal and adjacent ethmoid cells are apt to be involved and sections of mucous membrane or fungoid growth may demonstrate typical tubercles or giant cells. Fungoid and cheesy degeneration of the lining of the sinus, even in the absence of demonstrable tubercle bacilli, has a high diagnostic value.

The symptoms do not differ from those of simple chronic sinusitis until advanced bone involvement or general tuberculosis add their factors to the symptom-complex.

A history of previous bone disease in a tuberculous subject suffering from chronic sinusitis should lead one to suspect the bony walls of the sinus. A negative Wassermann reaction of course lends great weight to the differential diagnosis.

CEREBRAL COMPLICATIONS OF FRONTAL SINUSITIS

Hajek[1] states that the commonest cerebral complication in empyema of the frontal sinus is brain abscess. Of the eighty-eight cases in Dreyfuss' statistics of cerebral complications, not less than thirty-three were brain abscess, with or without meningitis, and abscess of the temporosphenoidal lobe occurred once. Postoperative meningitis has become an occasional complication since the introduction of the radical operation on the frontal sinus. However, only ten such cases are reported as undoubted in the revision of Dreyfuss.

Unfortunately, in my case, the incomplete necropsy prevented our localizing the cerebral abscess accurately, but it was in the parietal region near the horizontal ramus of the fissure of Sylvius. Owing to the advanced stage of bone destruction it was not possible to determine the route of cerebral infection.

TREATMENT

This should be early and surgical. If the anterior wall is perforated, practically the entire wall must be removed in order to eradicate all diseased tissue. Kuhnt's triangular incision accomplishes this result most effectively in a large sinus with bone destruction. Killian's incision is too low freely to expose the diseased areas under such conditions. If necrosis of the posterior wall of the sinus is found, the dura should be exposed, and if diseased, circumstances must determine whether or not it must be opened to search for deeper complications.

ABSTRACT OF DISCUSSION

DR. J. A. PRATT, Aurora, Ill.: I would like to report one case that was secondary to a primary local infection. A young woman came with some irritation there, and with all symptoms of tuberculosis of the lung. The sputum was examined and tubercle bacilli found; but later she developed an acute frontal sinus condition, which I was able to wash out by removing the anterior part of the middle turbinate. She was put on tuberculin, lived for two years, and then died of tuberculous peritonitis.

DEFECTS OF THE SINGING VOICE DUE TO NASAL AND ACCESSORY SINUS DISEASE*

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The subject of voice production from both the physiologic and pathologic standpoint has been a matter of more or less discussion among both laryngologists and teachers of singing. Some lay a great deal of stress on one phase of the subject, passing over lightly or ignoring other factors equally important. To enter into a description of the various details which distinguish good from poor singing is beyond the scope of this paper. However, in confining myself to the part played by the nose and accessory sinuses in the art of vocalization, I do not in any way wish to minimize other requirements which the singer must possess if he would make his song melodious to the human ear.

Voice is a complex mechanism, depending for its production on a motor element supplied by the lungs, a vibratory element supplied by the larynx, and a resonant element which is derived from the cavities of the chest and head. We have, therefore, as the result of the physiologic action of these organs on the air blast, three fundamental attributes of voice, namely: intensity, pitch and resonance.

The vocalist must adhere to certain scientific principles, if he wishes to reach the higher art standards. Properly functioning vocal organs, as well as a practical understanding of their use, must form the working basis and foundation of truly artistic singing. As there is a close physiologic relationship between the various parts of the vocal apparatus, it can readily be seen how a pathologic condition of the one may easily affect the function of the other.

An old Italian master has said that he who knows how to breathe, knows how to sing. In making this remark, he probably had in mind the development of the respiratory organs to a high degree of efficiency. Breathing for singing purposes is a considerable amplification of the ordinary act of respiration. Sufficient lung capacity and power must be possessed by the singer to insure the proper amount of air intake as well as the exercise of control of the expiratory blast. Whatever may be said of the merits of the different methods of breathing for vocal purposes, the respiratory function of the nose must be conceded as occupying an important place in each. Sir Morell Mackenzie[1] remarks in this connection: "It can hardly be necessary to say that the breath must be taken in noiselessly. Nothing can be more distressing than the gasps which often break a flood of vocal melody, like the creaking of the bellows of an organ. The air should be drawn in by the natural channel, which is the nose; the mouth

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1. Mackenzie, Morell: Hygiene of the Vocal Organs, New York, E. F. Werner, 1899.

being used only as a subsidiary passage when absolutely necessary."

A nasal lesion obstructive in character is a serious handicap to the singing voice, inasmuch as it interferes with the respiratory act and results in diminished intensity as well as range. Dr. Ricardo Botey reports some cases of singers who after operation for their nasal affection increased their respiratory capacity 300 to 500 cm. and added two or three notes to their upper register.

A predisposition to a subacute laryngitis and more frequently to a chronic pharyngitis often follows in the wake of an antecedent nasal disease. This is partly due to impairment of one of the main functions of the nose, which is to warm and moisten the inspired air, and partly to the presence of irritative postnasal secretions coming in contact with the pharyngeal wall, as the result of an accompanying sinusitis. One of the usual manifestations of a chronic pharyngitis is a huskiness and fatigue of the voice after slight use. These latter are among the more salient symptoms to which our attention may be drawn by the patient suffering from vocal troubles. A little less than a year ago I was consulted by a vocal student whose chief complaint was a more or less constant sense of irritation in the throat, much increased after using the voice. Persevering application in vocal culture for the previous year, under a competent instructor, had been almost barren of results. Examination of the throat revealed a granular pharyngitis. Intranasal examination showed the usual signs of a chronic hypertrophic rhinitis. The nasal septum was deflected high up on the right side with a bony ridge on the lower left side. Further questioning elicited a history of frequent colds with a consequent increase of nasal stenosis and postnasal dropping. A submucous resection of the septum was performed, for the purpose of establishing sinus drainage and ventilation. The turbinal turgescence gradually disappeared shortly after operation, as did also the pharyngitis with a short course of local treatment. This voice, previous to operation, was thin, weak and lacking in resonance. As the patient put it, "There was no place for the tones to go." Following the correction of the nasal trouble, the voice became gradually stronger. At present the range has increased from about one and one-third to two and one-half octaves. The volume has markedly improved with a decided gain in resonant quality. I have mentioned this case in order to bring to mind the etiologic relationship of intranasal defects to one of the most prevalent pharyngeal affections among singers. Ballenger claims that a chronic rhinitis and especially sinusitis, affecting the posterior ethmoidal cells and sphenoidal sinus, is very frequently the chief cause of a chronic pharyngitis.[2]

In order that the voice may be pleasing to the ear, it is necessary that the vibrations, produced by the action of the vocal cords on the expiratory blast, be reinforced by sound waves from the cavities of the chest and head. The fundamental tone would be wanting in resonance and volume, were it not for the sympathetic echoes, derived from certain spaces above and below the glottis, which are given the name of the vocal resonators. Above the larynx, these are: the supraglottic space, the pharynx, the epipharynx, the mouth, the nasal passages and the sinuses of the skull. They act on the fundamental tone produced by the larynx in such a way as to develop overtones which give color or timbre to the vocal sound. The resonant element in a large measure determines the beauty and charm of the singing voice. We are here principally concerned with the part played by the nose and accessory sinuses as vocal resonators.

That they have an important bearing on artistic vocalization can be readily appreciated by noting the absence of one of the most agreeable qualities of the voice, which results from nasal occlusion or sinus obstruction. A diminished sweetness and purity of tone will be especially marked, when the voice is used in the upper register. Sir Morell Mackenzie[3] claims that *timbre* is largely dependent on physical structure and is no doubt often inherited. He refers to the aborigines of New Zealand, in whom the sinuses of the skull are poorly developed, as having voices remarkably deficient in resonance.

There is a difference of opinion as to the manner in which the reinforcement of the fundamental tone is effected by the sound waves, which are set into vibration in the resonating chambers of the head. The mode of action of the soft palate as a nasopharyngeal valve in the production of the higher tones, as well as in the enunciation of nasal and nonnasal sounds, has been a subject of close observation by various investigators. Thrasher[4] is inclined to the belief that there must be at least a small opening between the soft palate and pharyngeal wall, "otherwise the vibrations must pass through the velum palati, which is a thick muscular curtain, and apparently poorly adapted to act as a vibrating medium." Frank Miller[5] has shown that in the production of overtones the palatine muscles are arranged in such a way that an air space exists on either side of the median raphe, which regulates nasal resonance.

Passavant has demonstrated a fold or ridge formed by the musculature of the posterior pharyngeal wall. This ridge serves to supplement the action of the soft palate toward making its closure more absolute. He claims that it appears only during the vocalization of nonnasal sounds. Froeschels[6] also undertook some experiments along the same line and gives roentgenograms of the skull, taken during the enunciation of different sounds. He found a ridge similar to that described by Passavant, but it appeared with nasal as well as nonnasal sounds. It was formed at the line of articulation between the pharyngeal wall and velum palati. Its thickness varies, averaging from 3 to 4 mm. As it appeared also during nasal sounds, its function cannot be to produce occlusion.

The action of the soft palate in regulating vocal resonance as well as in the proper enunciation of different sounds, is dependent on its degree of mobility. As this organ is largely under the control of the will it is amenable no doubt to a high degree of training. Its function may be interfered with by adenoid vegetations or such other postnasal obstructions as hypertrophy of the posterior portion of the inferior turbinates, or polypoid growths. An irritating postnasal secretion, due to a chronic rhinitis, is a frequent cause

2. Ballenger: Diseases of the Nose, Throat and Ear, Philadelphia, Lea and Febiger, 1914, p. 351.

3. Mackenzie, Morell: Hygiene of the Vocal Organs, p. 44.

4. Thrasher: The Effect of Intra-Nasal Obstructions on the Singing Voice, Lancet-Clinic, 1892, xxiv, 484.

5. Miller, Frank: Vocal Art Science from the Standpoint of the Use and Abuse of the Voice, Laryngoscope, 1913, xxiii, 39.

6. Froeschels, Emil: Ueber die Klangverhaltnisse in der Nase beim Sprechen und Singen und uber das Vorkommen und die Bedeutung des Passavantschen Wulstes, Arch. f. Laryngol. u. Rhinol., 1911, xxv, 420.

of a relaxed condition of the soft palate resulting in an impairment of its function for the singing of the softer and medium tones. Miller claims that as the palatal muscles "have a typical natural quality in tone production, on derangement they produce false sounds easily detected by the ear. If the levator or tensor palati become relaxed, the tone will have a relaxed sound. Should the palati pharyngei become relaxed or stretched, the top of the tone will seem to have a hollow sound.[5] Professor Bárány distinguishes two kinds of rhinolia clausa, one due to changes in form within the nose and nasopharynx, and the other to irritation of the velum palati. He gives these the names of rhinolalia clausa nasalis and rhololalia clausa palatina. As the result of interference with the tractability of this organ, the beneficial effect of the nasal-accessory sound is often lost and there is an absence of sonority in speech and song.

It is hardly necessary to mention the various intranasal deformities which interfere with the functions of the nose and accessory sinuses, and either directly or indirectly give rise to some defect of voice. Deviations of the nasal septum, hypertrophy or hyperplasia of turbinates, polypoid growths and adenoids are among the most frequent pathologic conditions which we encounter.

There are quite a number of cases on record, of singers, who after the correction of their nasal troubles, have gained not only a voice of better *timbre* and have added richness and volume to their tones, but have even increased their vocal compass two or three notes. The amount of benefit to be derived from intranasal surgery for the correction of vocal defects, must of course be measured according to the degree of nasal stenosis present, as well as the relative position of the obstruction. Its character and its location in the nares determine to what extent the respiratory, phonotary or resonant function of nasal origin may be affected. Those pathologic conditions which render the nasal passages impervious and at the same time interfere with the proper adjustment of the palatal muscles, are perhaps the most detrimental to the singing voice.

A slight septal deflection disadvantageously placed may result in a marked lessening of vocal quality. I have frequently been impressed with the deficiency of resonance in singers, while using the voice in the upper register, which could be traced primarily to a high deviation of the septum. An accompanying hypertrophic rhinitis, with narrow nasal passages, no doubt contributed to an increase of vocal difficulties in three cases which I have in mind. In two of these patients, one a tenor, the other a mezzo-soprano, correction of the septal deformity resulted in an increase of range of voice and a marked improvement in the resonant quality. The third case to which I refer, is that of a vocal teacher, whose chief complaint was an inability of achievement of a sufficient degree of resonance for his upper tones, to which he as a tenor naturally aspired. Examination of the nose disclosed a high deviation of nasal septum on right side, with a thickening of the vomer, which impinged against the left inferior turbinate. Removal of septal obstruction, although not increasing the range of voice, resulted in a most beneficial effect on resonance and volume. A greater ease of production was enhanced by an added richness and sweetness of tone in the entire compass of the voice.

I have endeavored to point out briefly in this paper a few of the more prevalent voice defects, with their relative etiologic bearing on nasal and sinus disease. As the vocal apparatus is intricate in its physiology, diseased conditions which at first sight give the appearance of pathologic entities, will on closer investigation often prove to be the source of functional impairment, in a part of the mechanism, farther removed. There are other elements of a more ethereal nature, on which I have not dwelt, that have to do with artistic singing, and which are essential to successful vocal attainments. The acquisition of these will depend on individual adaptability as well as correct training in voice culture, and in no small measure on the possession of properly functionating vocal organs.

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INVOLVEMENT OF THE URINARY TRACT AS A RESULT OF FOCAL INFECTIONS IN CHILDREN *

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During the past year and a half we have been observing cases of hematuria which seemed to us to have a distinct clinical history. These have not been numerous, but they have occurred, perhaps, oftener in the last six months than previously, and there seems to us to be a distinct sequence of symptoms, and a clinical history and laboratory findings which might be regarded as distinctly significant. For this reason we present the following cases which typify this condition.

Case 1.—William M., aged 3½ years, about one week previous to entrance into Mercy Hospital on Jan. 9, 1914, had been taken ill with a severe cold and an acute tonsillitis, with a temperature of 105 F. This temperature had subsided, the child showing no other symptoms until the day before entrance, when the temperature again rose and the urine was shown to be distinctly bloody. This was so bloody, in fact, as to suggest a hemorrhage into the bladder, such as might be caused by a renal or vesical calculus, or in some instances by tuberculosis. During this time he had a severe dry cough and some difficulty in swallowing. During the previous winter he had had a bronchitis and croup. During the period in the hospital, which lasted six days, the temperature ranged from 101 to 102 F., gradually falling to normal on the day on which he left. On entrance, the urine was found to contain a large amount of blood, some pus, and some blood casts. This gradually changed until the blood had practically disappeared and the pus was present in abundance, the urine clearing up within two weeks after leaving the hospital. There has been no further recurrence of this condition, although specimens of urine have been examined at repeated intervals since. The blood showed a leukocytosis of 21,000, the reds being 4,000,000 and the hemoglobin 80 per cent. The treatment consisted of hexamethylenamin, 1 grain, and sodium salicylate, 3 grains, every three hours for four doses, the day after entrance. Fischer's solution was given rectally by the drop method. The child made an uninterrupted recovery. The quantity of urine on the day after entrance was 410 c.c. During the twenty-four hours previous to departure, the quantity of

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urine increased to 1,015 c.c. A culture made from the urine showed *Staphylococcus albus*. The test for tubercle bacilli was negative.

CASE 2.—Christopoulas A., aged 24 months, entered Presbyterian Hospital, Chicago, March 23, 1914. The child had been healthy up to two days previous to admission, when it suddenly developed a fever and simultaneous swelling on the left side of the neck. The mother noticed that the urine at that time was dark and smoky. The child vomited once or twice at the onset. When examined the child was normal, except for an enlarged actively infected tonsil and a few palpable glands in the neck. His temperature on admission was 102 F., and for the first few days ranged from normal to 104 F. Hemoglobin ranged from 75 to 80 per cent.; reds, 4,600,000; whites, 19,600 (polymorphonuclear leukocytosis). The urine on repeated examination showed serum and nucleo-albumin present, a few hyaline and granular casts, and many red blood cells in the uncentrifuged specimen. The urine culture showed *Staphylococcus albus*. The blood culture was negative. The treatment consisted of rest, bland diet, and urinary antiseptics. At the end of eight days under this treatment, the temperature was normal. The blood had appreciably diminished in the urine, and the throat infection had markedly subsided.

CASE 3.—Sam S., aged 6, entered the Presbyterian Hospital, Dec. 7, 1914. For the month previous to entering the hospital, the child had had a sore throat and for the two weeks previous to entrance had had a discharge from the left ear. There had been some pain in the left side of the head for the past three days. The past history of the child was negative, except for repeated attacks of sore throat. The child remained in the hospital seven weeks. During that time the temperature ranged from 98 to 100 F. The pulse was 88 to 102. The blood examination showed hemoglobin 85 per cent., red cells, 4,720,000; whites, 15,350 (polymorphonuclear leukocytosis). The urine on repeated examination showed serum albumin and nucleo-albumin, granular and hyaline casts, a moderate number of red cells and leukocytes. The physical examination was completely negative, except for an otitis media and a subacute tonsillitis. The otitis media was treated locally by irrigations, hexamethylenamin and sodium bicarbonate, given alternately for five weeks, but at the end of this time the urinary disturbance had only partially cleared. There was still present some albumin and casts, and not a few red cells. At this time the tonsils and adenoids were removed. Following this procedure the abnormal findings in the urine rapidly diminished. At the end of one week the urine showed complete absence of albumin, casts and red blood cells. The urine culture was negative; the blood culture showed *Staphylococcus albus*.

CASE 4.—Francis L., aged 3½ years, entered the Presbyterian Hospital, Feb. 5, 1915. The child had had a severe coryza for a month, and one week before admission to hospital this became more acute and his temperature rose to 100 F. Six days after the onset of this condition, the urine was found to be tinged with red. There was nothing else of importance in the past or family history. On physical examination, nothing was found except the watery discharge from the nose and enlarged infected tonsil. This child remained at the hospital for seven weeks, during which time the temperature varied between normal and 100 F. In the early stage the blood showed a hemoglobin of 88 per cent.; red cells, 5,000,000; whites, 26,900. The urine on repeated examination showed nucleo-albumin and serum albumin, many hyaline and granular casts, many leukocytes and red blood cells. When he was discharged from the hospital, the boy's urine was absolutely normal. A blood culture showed nonhemolytic streptococci. The urine culture showed streptococci producing a small zone hemolysis.

CASE 5.—Willis A., aged 5, entered the Presbyterian Hospital, April 26, 1915. The child had a sudden onset of severe tonsillitis, and complained bitterly on swallowing food. He had a high temperature for two or three days. On the sixth day he had apparently recovered. On the seventh day, the fever again rose and the mother noted that every specimen of urine voided was tinged a bright red. Previous to the tonsillitis the child had been in perfect health. Physical examination showed nothing, except the throat findings and slight systolic murmurs. The pharynx was a bright red. The tonsils were enlarged and showed marked evidence of an acute cryptic infection. The temperature on admission was 104 F. This gradually decreased to normal by the seventh day. As to the blood, the reds were normal, the whites were 18,200. Urine examination showed nucleo and serum albumin, many red blood cell casts, and myriads of red blood cells in the uncentrifuged specimen. The urine culture showed *Staphylococcus albus* and *Streptococcus hemolyticus*. A throat culture showed *Staphylococcus albus* and *Streptococcus hemolyticus*. The child left the hospital ten days after admission and a specimen obtained on May 22 showed perfectly normal urine, the general condition of the child being normal. Treatment in this case consisted of urinary antiseptics in the form of hexamethylenamin, 2 grains three times a day.

CASE 6.—Herbert C., aged 6, entered the service of Dr. Shambaugh at the Presbyterian Hospital on May 1, 1915. Two weeks previous to entrance, the right ear had begun to discharge. Two days later the left drum membrane was punctured and a purulent discharge resulted. Ten days before the ears began to run the child had had measles. The discharge from both ears had lessened during the two days previous. A mastoid condition developed the day before entrance. At that time the uncle, who was a physician, noticed that there was albumin and blood in the urine. During two weeks previous to entrance the child had a temperature of 98 to 101.6 F. Physical examination showed nothing further than the involvement of the ears with some slight puffiness under the eyes. The lungs, heart and abdomen were negative. On the day of entrance, the child was anesthetized, the mastoid cells were drained, the lateral sinus being exposed. The hemolytic streptococcus was isolated from this abscess. The temperature came down to normal on the fifth day, and remained so during the rest of the time of the hospital stay. The urinary findings on entrance were: serum albumin ++, no casts, many erythrocytes and leukocytes. On the following day, nucleo and serum albumin were present in large amounts, as were hyaline and granular casts, the number of erythrocytes being somewhat reduced. By May 4, the urine had absolutely cleared up. On May 2, the white cells numbered 30,850. On the next day these were reduced to 28,600. The urine culture was negative on the third day.[1]

A review of these six cases shows that in every case the acute attack of hematuria followed some infection of the nasopharynx or tonsil. In two of these cases recovery was almost immediate, following, in the one instance, the removal of the tonsil and, in the other, the drainage of the mastoid. In two cases the culture from the urine was negative; in both of these the culture was made several days after the onset of the condition. In two of the other cases the *Staphylococcus albus* was found, one a streptococcus producing slight hemolysis, and in the other a *Staphylococcus albus* and a *Streptococcus hemolyticus*. The blood

1. It was impossible to obtain reliable blood cultures on all these children, sometimes because they were so young, and also because of parental objection. The method of blood culture employed was that of Rosenow.

Fifteen to 30 c.c. of blood are drawn from a vein and decalcified by adding a solution of .2 per cent. sodium citrate in sodium chlorid solution, in the proportion of 5 c.c. of blood to 1 c.c. of solution. The citrate of blood then lakes with ten times its volume of sterile water. With sterile precautions it is transferred to large centrifuge tubes of 25 to 30 c.c. capacity, and centrifuged at high speed for twenty minutes. This throws down a fine sediment which will contain any bacteria present. The supernatant fluid is then decanted, which serves as a means of getting rid of the hemoglobin and serum. In this way we probably eliminate certain of the immune bodies which would retard the growth of bacteria. The sediment is taken up in a few c.c. of sterile broth and shake cultures are made in tall columns (10 to 20 cm.) of ascites dextrose (1 per cent.) agar, on blood agar slants and plates, Loeffler's serum, broth and ascites broth. Aerobic and anaerobic cultures are made on each kind of medium. Blood cultures by this method have been positive in many instances in which the ordinary methods have failed repeatedly.

culture in one instance showed an organism similar to that found in the urine. When taken, the organisms obtained on the cultures from the throat showed a great similarity to those obtained in the urine. It is significant that five of these cases occur in boys, varying in age from 2 to 6 years. As to the clinical picture, the following may be said: With the exception of one case, the tonsillitis which preceded the condition had practically subsided before the appearance of the hematuria. With the exception of this case, the tonsillitis preceded the hematuria six or seven days. The hematuria came on suddenly and was accompanied by albumin and casts. In general, it showed a tendency to rapid remission, so that within two or three weeks the urine was clear. There seemed to be a tendency for the leukocytes in the urine to increase in number with the disappearance of the red cells, which in turn disappeared. The temperature was high and irregular in the acute stages, coming to normal with the disappearance of the urinary findings. There was practically no disturbance of the general condition of the patient, the amount of prostration being surprisingly slight. There was no edema in any of these cases, except for a very slight swelling of the eyelids in the case which followed the mastoid involvement. In none of the cases was there a history of the giving of drugs, such as hexamethylenamin, which might produce temporary hematuria.

The blood showed a very slight anemia in all cases, the reduction in the hemoglobin of the red cells being so slight as to be negligible. In all cases there was a distinct leukocytosis of the polymorphonuclear variety. This varied between 15,000 and 30,000.

We have had to do here with some form of acute nephritis of a hemorrhagic type. The rapid recovery without the appearance of secondary symptoms seems to us to be quite characteristic. That the condition is not one of the acute hemorrhagic nephritis following a mild case of scarlet fever the following points confirm:

1. In none of these cases was there such edema or pallor as is so characteristic of the scarlatinal nephritis.

2. In none was there a uremic condition, or anything simulating uremia.

3. In spite of the fact that these children were in contact throughout the course of their trouble with children of their own age, both in the wards and in the homes, there is no instance in which scarlet fever developed.

Very little definitely can be said concerning treatment. In view of the fact that so many of the cases showed positive urine cultures, it was thought wise to give urinary antiseptics. There is some reason to doubt whether such antiseptics were of much value in the treatment, but it is altogether likely that they at least did no harm. Fisher's solution was made use of in two cases. In one case the effect was very slight, in the other the urine was already clearing up after the mastoid operation before the solution was given. Removal of a focus of infection brought excellent results.

CONCLUSIONS

1. There is a form of acute hemorrhagic nephritis occurring in children which usually follows six or seven days after an acute tonsillitis, and is accompanied by high rise in temperature and hematuria.

2. In some cases the removal of a focus of infection is followed by immediate clearing up of the urinary findings. In many instances cultures from the blood and from the throat agree very well with the urinary cultures.

ABSTRACT OF DISCUSSION

DR. W. D. LUDLUM, Brooklyn: I am surprised at the small doses of hexamethylenamin that Dr. Grulee uses. From 35 to 75 grains a day are necessary if it is to be of any value in rendering the urine antiseptic. Enough must be given to provide an efficient concentration of formaldehyd in the urine. These small doses do not supply that.

DR. FRANK C. NEFF, Kansas City: Dr. Grulee's paper shows the importance of locating the focus of infection, and this is especially important in cases that do not respond to therapy with hexamethylenamin and similar drugs. One is apt to conclude that urinary infection is the primary and only condition present, when it may be only one feature of a general infection. One sees this frequently with acute intestinal disorders in infancy.

DR. L. T. ROYSTER, Norfolk: I would like to ask if any one is getting good results from the vaccine treatment in cases such as Dr. Grulee reported, and whether any one has had experience with acid sodium phosphate for acidulating the urine. All those from the East know that there is a vast amount of discussion with reference to the diarrheas of summer, and it has been brought out that a certain number of cases present exacerbations after the blood and mucus have disappeared from the stools and the physical examination of those cases will be negative. One should always examine the urine in the early stages of an infectious diarrhea, and, moreover, one should examine two or three specimens before concluding that there is no trouble there. Examining specimens every two or three days to a week apart, one will find a number of cases of pyelitis and the laboratory tests will show that there is a colon bacillus infection. This is but one interesting feature of the part played by the colon bacillus in infectious diarrhea.

DR. C. G. GRULEE, Chicago: As to the hexamethylenamin perhaps Dr. Ludlum is correct in his general theory, but it will not work out in practice. The hexamethylenamin will not be broken up in large quantities. More than two or three grains will not be broken up. It is difficult to prove just how we get results from the small amounts, but I have found that the urine clears up equally well after small doses, and the large doses may be responsible for hematuria. As to Dr. Royster's remarks, they were directed to a condition different from that referred to in the paper; it did not refer to colon bacillus pyelitis. In some of the cases I found nothing definite, but I got no colon bacilli from the blood or urine. As to the acid sodium phosphate treatment, that has no relation to these cases, but is adapted to the colon bacillus pyelitis. In the latter condition we have prepared vaccines and used them wherever possible, but never with any particular success in the acute stages. In subacute cases we have used them as a protective agent with somewhat more success. In one case vaccines brought results where nothing else had had any effect. As to the frequency of colon pyelitis, we get this in almost 25 per cent. of the cases in the Presbyterian Hospital during the warmer months, following diarrhea and often following operation for harelip and cleft palate. The route by which the colon bacillus gets into the kidney has occasioned considerable discussion. Some think that it is by an ascending infection through the urinary tract, but it seems to me much more probable that it is through the lymphatics for there is a chain of lymphatics leading from the cecum to the right kidney and this is probably the course that the infection takes.

Tuberculosis and Culture.—The spread of tuberculosis throughout the world is closely connected with the degree of culture and the extent of commercial exchange obtaining in each country.—A. Calmette-Lille.

EXPERIMENTS ON ANIMALS, AND THEIR INFLUENCE ON MORTALITY *

J. H. LANDIS, M.D.
Health Officer
CINCINNATI

The mental attitude of those opposing vivisection furnishes a rich field for the psychologist.

Sporadic outbreaks against vivisection may be expected to occur, just as do sporadic outbreaks of smallpox or other acute infections. They occasion a flurry of excitement, temporarily obstruct progress, and are then brushed aside.

To the antivivisectionist, the experimenter looms large as a monster of cruelty, running amuck among animals with a red hot poker in one hand and red hot pincers in the other, gouging out eyes or twisting out livers, kidneys, hearts, lungs and other anatomic parts for the pure joy of maiming and killing.

This delirium tremens attitude toward vivisection seems to be a source of so much real comfort to those who oppose experiments on the lower animals that it is almost an act of cruelty to try to enlighten them; their delusions are so fixed that attempts to dissipate them are almost as hopeless as to convince a maniac behind crossed bars that he is an exceedingly humble member of the Smith family instead of King Solomon.

Medicine and surgery have reached their present state through a long line of experiments on man and the lower animals. Ideas which have resulted in lengthening the average duration of life over twenty years, during the past century, had their inception in the laboratory and were confirmed at the bedside.

When the Almighty gave man "dominion over them," the lower animals, He named no restrictions and, when He placed Adam in a deep sleep and extracted a rib, He qualified as the first and greatest vivisectionist of all time.

The prevention of suffering, disease and death, and the prolongation of life can be said to be the objects sought by those experimenting on the lower animals.

Not idle curiosity nor a Jesse Pomeroy capacity for cruelty, but a desire to make this world a better place to live in, for both animals and man, is the motive inspiring the experimenter.

Man is not the sole beneficiary. The lower animals also have their lives prolonged, and are saved from needless suffering as a direct result of these experiments.

A few years ago, anthrax killed millions of dollars' worth of stock. In England alone, pleuropneumonia caused a loss of $450,000,000 in the first quarter of the nineteenth century through the death of cattle due to this cause. Introduced into the United States, it threatened to ruin the cattle industry of the country. Experiments carried on in France demonstrated its infectious character; the application of this knowledge entirely eliminated it in the United States, and was accomplished in six years at a cost of $1,500,000, an infinitesimal outlay for the results obtained.

In the old days, glanders claimed thousands of horses; Texas fever, thousands of cattle; hog cholera, hundreds of thousands of hogs; and bovine tuberculosis, untold thousands of domestic animals. These diseases are now understood and their prevention is being brought about, thereby not only adding to the comfort of the animals but also saving millions of dollars' worth of food from destruction.

During the late eighties, von Behring conceived the splendid idea that diphtheria might be robbed of many of its terrors. The carrying out of this idea meant the use of animals for experimental purposes, and a number of horses and a considerable number of guinea-pigs were used.

It may be of interest to compare two five-year periods in Cincinnati's death rate from diphtheria and croup, one before, the other after antitoxin had been discovered. From 1876 to 1880 inclusive, with a population of 245,000, 872 children died of diphtheria and croup. From 1909 to 1913 inclusive, with a population of 380,000, 227 children died from the same causes. During the first five-year period the average annual death rate per hundred thousand of population was 71 and during the second five-year period, 12.

In 1912, the Bureau of the Census based its vital statistics on a population of 95,545,336. Assuming that similar results in the treatment of diphtheria and croup were obtained throughout the country, this one series of vivisection experiments saved the lives of 56,345 children last year, as many children, almost, as are attending the public and parochial schools of this city. According to the Committee of One Hundred on Conservation, this represents an economic saving for the whole country of $227,750,000 in one year from one disease alone.

To those who place a higher value on the life of a rabbit than they do on that of a child, these figures will mean nothing. To those parents, however, who have had a child rescued from death by slow suffocation or from blood poisoning, it means a foretaste of heaven.

To the old-time doctor it means the difference between a losing fight in 40 per cent. of his cases and a practically uninterrupted series of victorious conflicts with one of the greatest scourges of childhood.

The prevention of lockjaw and hydrophobia has been perfected through experiments made on animals. The cure of these diseases can be discovered only by a continuance of these experiments. The Pasteur treatment has reduced the number of cases of hydrophobia in persons bitten by rabid dogs from between 6 and 12 per cent. to less than 1 per cent. To those who always base their conclusions on the exception to the rule, this will mean nothing; but to one who has seen some poor unfortunate racked by the convulsions of hydrophobia, it means more than words can convey.

The prevention of lockjaw was entirely due to experiments on animals. Before this great discovery was made, the annual celebration of the Fourth of July ushered in a series of dreadful tragedies. Young America paid dearly for its patriotism. In hospitals and private homes throughout the land, the victims of lockjaw passed through the agonies of recurrent convulsions until outraged Nature closed the scene with the death of the victim.

Vivisection has changed the course of events, and a death from lockjaw now is almost sufficient ground on which to base a suit for malpractice. A few animals were used to bring about this change. Their use for that purpose has been challenged by the antivivi-

* Read before the Health Officer Section of the American Public Health Association, Jacksonville, Fla.

sectionist; but to one who has stood by the bedside of some child and witnessed his last few agonizing hours, the change wrought in the prevention of this disease is like a beautiful morning after a night of frightful dreams.

During 1912, an average of 398 funerals due to tuberculosis and 190 due to cancer were held in this country every day. A large proportion of the deaths due to tuberculosis occur at a time when the victim is at the most productive period of his life. According to the estimate of the Committee of One Hundred, the deaths due to tuberculosis represent an annual economic loss of over $727,000,000. Physicians are familiar with the methods which have proved efficacious in the cure of some cases, but a specific cure, one which shall be to tuberculosis what quinin is to malaria, remains to be discovered. This cure can come only through experiments on animals, and the final crucial experiment must be on man. Is the end desired worth while? Are investigators to have their activities paralyzed, and is Western medicine to enter on a sleeping contest with that of China? The tragedies represented by those 145,000 deaths leave the imagination staggering and impotent. Are the necessities of helpless women and children to have no weight in the balance? Is the life of a guinea-pig to stand between young men and women and bar them from a fair chance in life? Shall we continue to stand by the bedside of those dying from this cause and merely dream of a cure, or shall we continue experiments the results of which, experience leads us to believe, will be as great a blessing to the human race as are those now enjoyed through diphtheria antitoxin?

To the antivivisectionist, the convulsions incident to tuberculous meningitis mean nothing; the days and nights of torture incident to hip joint or spinal disease mean nothing; the weeks, months and years of cough, fever and slow starvation due to consumption of the lungs mean nothing; but to the physician scientist they are goads that sting and lacerate, urging, always urging, him to solve the problem of dying thousands.

Cancer comes later in life, as a rule, and its drain economically is not so great as that of tuberculosis. Its capacity for torture, however, is limitless and ends only with the death of the victim. The 69,000 deaths reported in 1912 represent untold agonies to those afflicted and to their families. In some it meant death by starvation, in others a slowly advancing ulcerative process that consumed the face, the eyes, the nose, until the victim was transformed into a horrible caricature of a human being. Woman was its favorite victim; her organs of reproduction and the infants' source of food supply its favorite choice of location. Thousands of women who were indispensable to growing children, and who had reached a period when fortune seemed ready to dispense its choicest favors, saw the grim reaper beckon them into the dark shadows from which they never returned.

There is an element of mercy in the deaths caused by the acute infections, for the end comes quickly. In cancer there is no mercy shown, for the disease counts its victim's life blood drop by drop and rots his tissues until he becomes a loathsome decomposing mass. The cause of cancer is unknown; its cure can be brought about only through the continuance of experiments. In the meantime, for reasons not clearly understood, the problem is becoming progressively greater, for each year records a higher mortality from this cause. The discovery of a cure will add almost a decade to the average duration of life, and reduce the total mortality about 6 per cent. Are these objects worth working for, and, if so, are the lives of a few animals to stand in the way? Permit the question to be answered by those who would be benefited. If the records of the Cincinnati Health Department can be taken as an index to conditions over the entire country, one out of every eighteen people now living in this country face a lingering death from this cause. Do the other seventeen care to take the chance that they will not be the one to solve the great mystery this way?

The great advances in surgery were brought about through experiments made on animals. The buried suture cost the life of one horse; the catgut ligature the life of one calf!

Had Lister's discoveries been given to the world before our Civil War, they might have saved the lives of 1,142 who died of gangrene, 2,747 who died of blood poisoning, over 90 per cent. of those who died of wounds implicating joints, and practically all of the 1,497 who died of secondary hemorrhage. Lister's experiments, making modern surgery possible, involved the use of so few animals that one stands appalled at the idea that similar beneficent results in other diseases may be halted through the pernicious activity of a few individuals in whom two ideas simultaneously entertained would produce symptoms of compression of the brain.

But for Lister and his followers, appendicitis, gallbladder disease, the various conditions in the digestive tract amenable to surgical treatment, and those peculiar to women would be claiming their thousands. In fact, modern surgery with its wonderful life-saving devices would be unknown. If the time ever comes when it becomes necessary to settle this question of vivisection, let those who live today because of past experiments be heard and marshal the spirits of the thousands sacrificed because of lack of knowledge during the Civil and Spanish-American wars. The living and the dead testify to the beneficent results!

Cholera, the plague, smallpox, malaria, yellow fever and epidemic cerebrospinal meningitis have been conquered through knowledge gained experimentally.

Control over the plague cost the lives of a large number of rats and a still larger number of fleas. Control over smallpox costs the lives of a considerable number of calves each year. It is said on good authority that control over malaria has cost the lives of a vast number of perfectly innocent mosquitoes, and the same can be said of yellow fever.

The discovery of the Flexner treatment for epidemic cerebrospinal meningitis was secured by a series of experiments on twenty-five monkeys and 100 guinea-pigs. Before this was done, seventy-five out of every hundred attacked by the disease died, and many of those who escaped with their lives were left helpless dependents, some blind, some deaf, some idiotic, some paralyzed. Since the perfection of Flexner's plan of treatment, the figures are exactly reversed, 75 per cent. being quickly cured, practically none left dependent.

When the court decides whether or not experiments shall continue, introduce the testimony of those who

have been saved, marshal the living from the blind and insane asylums who might have been saved from a fate worse than death, and the records of those dead from this cause.

Flexner's fame will stand with that of Jenner, Pasteur, von Behring and Lister, and, throughout the coming centuries, will grow greater, while the bodies of his detractors rot in forgotten graves.

Keen is authority for the statement that maternity hospitals at times lost as high as 75 per cent. of their inmates from child-bed fever, and that a mortality of 3 per cent. in general practice was considered about normal. To Pasteur and Lister belongs the great credit of practically eliminating this disease so that the mortality has fallen to less than 1 per cent. Without the knowledge gained through their experiments, Cincinnati's loss from this cause in 1912 would have been about 223 instead of twenty.

When the question of vivisection comes up for final settlement, let 389 mothers with babies in their arms march before the jury and then show by statistics that, but for experimentation, eleven of these mothers would be in their graves.

In the olden days, the majority of operations for cesarean section resulted fatally, and one successful operation was enough to establish a surgeon's reputation. Now practically all cases are successfully performed, and a failure raises the question of the surgeon's efficiency. A few years ago, ruptured tubal pregnancy was almost necessarily fatal; now it has come to be one of the safest operations in surgery, and annually saves the lives of thousands of women.

The successful removal of ovarian tumors is of so frequent occurrence that the reporting of a case in a medical society is usually prefaced with an apology for consuming the members' time. In the good old days, before experimentation made this result possible, the victim "passed out" through weary years of suffering.

When the evidence is submitted to the court, present pictures of advanced cases or, preferably, the living case, and then pass before the judge those who have been rescued from untimely graves. The years of usefulness added to the life of woman through this one operation would aggregate hundreds of thousands. While this operation antedates the experiments making modern surgery possible, the almost uninterrupted series of recoveries are entirely due to facts established by these experiments.

Anesthesia, local and general, owes its development and perfection to experiments. Many heads, supposedly wise ones too, wagged solemnly when ether was introduced as an aid to surgery, but the experiments were continued and different technic and materials tried out until, at present, postoperative pain, nausea and discomfort are practically eliminated from the olinical history.

In the olden days (when, according to some people, all of the good things happened), the patient was roped and thrown like a steer at a round-up. His body was strapped to a table, and whatever was necessary to do was done despite his struggles. If it was an amputation, the bleeding stump was thrust into boiling pitch to check hemorrhage. A little later, the actual cautery was used for this purpose; a little later, torsion, and finally, the ligature. These advances constituted steps in the series of experiments necessary to save life and, doubtless, were bitterly condemned at the time.

I have heard the description of an amputation of the breast done nearly a hundred years ago by Dr. Hancock of Milleville, Butler County, Ohio. The woman went through the operation with but one evidence of pain and that was a sharp, hissing intake of the breath when the first incision was made. This operation, like all others done before anesthesia was discovered, was probably delayed so long that permanent recovery was not to be expected.

Fifty years ago, many parts of the body were considered beyond the reach of the surgeon. Experiments on the lower animals have brought them, one after another, into his field. Even the heart itself is laid bare, and lives saved by closing stab wounds heretofore considered necessarily fatal. The brain is no longer forbidden territory and, through the knowledge gained by experiments, tumors are located and removed and abscesses drained, thereby saving many valuable lives.

In the past seven years, more has been learned concerning the cause and accurate diagnosis of syphilis than was learned during the preceding four centuries. With the cause isolated, past experience leads us to hope that a quickly acting cure will be perfected. What was learned during the past seven years was wholly due to experiments on animals. The working out of a cure must come through a continuance of these experiments.

When vivisection is arraigned before the court, call the roll of the innocent victims of man's immorality. Millions will answer who died before they were born, and countless thousands of women whose husbands were damaged goods at the time of marriage. Take the court to the nearest asylum and show those hopelessly insane from this cause, and then let the court know that vivisection aims to replace a stillbirth with a healthy living child, childless women with happy mothers, the hopelessly insane with normal men and women.

Some advances have been made toward perfecting a specific cure for gonorrhea; further advances can come only through a continuance of these experiments. When the testimony is introduced in this court scene, gather the blind from the asylums and let the court look into their sightless eyes.

Smallpox, a little over a century ago, was one of the greatest causes of infant mortality. An adult without a pitted face was a curiosity. In the century antedating Jenner's discovery of vaccination, fifty million lives were lost in Europe from this cause alone. There has never been an epidemic since vaccination was discovered that has not illustrated its protective value, and yet people exist who are color blind to facts and who believe, or profess to believe, that doctors advocate vaccination for the fee that is in it. Slander's venomous tongue never fashioned a more malicious falsehood. In all the annals of the race, there is nothing surpassing the unselfish attitude of the physician whose whole life is dedicated to an effort to bring about conditions that actually threaten his livelihood. Treating one case of smallpox is worth more, in fees, than is received for vaccination in the course of several years.

Trying out vaccination meant experimenting on human beings. The beneficent results obtained are

seen on every hand in the faces of the people and in a study of mortality records. In the old days about 90 per cent. of the people had the disease, and from 25 to 40 per cent. of these died. At present the immunity enjoyed through vaccination is so universal that the disease hardly figures in mortality records and, when it does, nearly 100 per cent. of the deaths are in unvaccinated individuals. All advances in therapy, whether due to specific serums, vaccines, antitoxins or drugs, are the direct result of experiment.

The first doctor to administer quinin for malaria was experimenting with his patient. Has the result justified the experiment? The first one to give thymol in hookworm disease was experimenting. Ask the millions of cured anemics from this cause if the results have justified the experiment. The first one to give mercury and potassium iodid for syphilis experimented with the patients, and so the list might be continued indefinitely with practically an unbroken series of affirmative answers to the question.

Life is an experiment. When Fulton saw the first steamboat advancing against wind and tide, it was the result of an experiment. When Morse flashed messages over wires between widely separated points, that was the result of an experiment. When Marconi harnessed the ether waves and talked across the ocean, that was the result of an experiment. When Edison reproduced the sound of the human voice, that was the result of an experiment. When the Wright brothers, in the face of incredulity and almost insurmountable obstacles, conquered the air, that was the result of an experiment. Bessemer, Burbank, Bell and the thousands of others who have unlocked Nature's storehouse and given her secrets to be the servants of man have all been experimenters. What they are in their chosen fields, Lister, Pasteur, Ehrlich, Wassermann, Flexner, Jenner, von Behring, Reed, Carroll, Lazear and thousands of others are in the field of medicine.

Research work in preventive medicine requires genius, imagination and industry. When the goal is attained, the reward, while not a material one, is "enough to overpay lifetime toil and sacrifice." It is like that which "comes when some patient watchman of the universe at last beholds the light we call discovery, or when the chance rock in some derided student's pathway tells the secret we know as science."

Shall we gradually retrograde to a stone age period of living, or shall we continue to experiment along lines that will ultimately make man absolute master of his environment?

The discovery of methods of immunization against disease has been made possible wholly through experiments. In the Civil War, typhoid fever and dysentery killed more men than did the bullets of the enemy. If the men rendered unfit for duty during that period in either of the armies could have been kept well and fit while those diseases ran riot in the other, the end of the war would have come much sooner; and, had the South possessed the advantage, the result would probably have been reversed.

Typhoid vaccination has eliminated that fever from our army and navy and has saved many lives in civil life. Dysentery is not the scourge to troops in the tropics that it was twenty years ago. These changes have been brought about by experiments on animals.

The relationship between infant mortality, due to intestinal diseases, and a polluted milk supply has been established by experiments. The application of the knowledge gained has gradually reduced the mortality from this cause in Cincinnati from 103 per hundred thousand of population in 1910 to 57 in 1914. The animals used in assembling the proof have been few in number compared to the lives saved, and it is a conservative statement to say that for each guinea-pig used, a thousand babies have been saved from death.

To the antivivisectionist, the experimenter is the last word in selfishness, his own body the one thing in the world too sacred for experimental purposes.

History records no more convincing evidence of devotion to an idea than appears on almost every page of the history of medicine. Our literature is rich in material calculated to inspire the heart and brain of poets and writers of romantic fiction.

The work of Carroll and Lazear furnished an example of heroic self-sacrifice that is hard to duplicate in the annals of the race. Carroll deliberately subjected himself to the bite of a mosquito thought to be infected with yellow fever. The disease resulting therefrom placed his life in jeopardy for days, and left him with a damaged heart that ultimately caused his death. Lazear deliberately permitted a mosquito to feed on his hand, and a week later was a martyr to science. The names of those other heroes who took similar chances in establishing the method of transmission of this disease should be inscribed on the same tablet with those of Carroll and Lazear. In making this great sacrifice, these men saved the lives of thousands of others and removed the tropics' most pitiless scourge. But for their work, the Panama Canal would be a dream instead of a reality, and the southern portion of this country would be devastated periodically by the yellow plague. If experiment had only this one great achievement to its credit, the continuance of others along similar lines would be a thousand times justified.

Several years ago Mrs. Carroll sent me a copy of a portion of a paper in Dr. Carroll's handwriting. Two paragraphs from this will indicate the sublime heroism inspiring this series of experiments:

> Before the mosquito experiments were finally agreed upon, Dr. Carroll suggested twice to Drs. Reed and Lazear that they themselves submit to the inoculation as the best atonement they could offer for subjecting others to the risks entailed thereby.
>
> As an earnest of our appreciation of the absolute necessity for using human beings and of our sincerity and willingness to assume the same risk that we were compelled to impose on others, it was agreed among the three American members of the board that they would submit themselves to the same risk and mode of attempted inoculation.

These three American members of the commission are in their graves. It would be an interesting fact to relate at this time that a grateful country had provided generously for those left dependent. One would assume, without investigation, that Southern boards of trade had voluntarily made it their business to place the families of these benefactors beyond the reach of want. As neither of these conditions has been brought about, however, it must be stated with humiliation and shame that the proverbial ingratitude of republics is still in evidence.

Reed, Carroll and Lazear freed a large portion of the Western hemisphere from the danger of yellow

fever, and made the new South and the new tropics possible. Modest pensions have been given their families, but, from reliable information, it appears that the children of Dr. Carroll are being denied opportunities for a liberal education because of lack of funds.

In a paper of this character, it may be permissible to refer to the men of the Public Health Service who have risked their health and lives while investigating "the major pestilences" or while maintaining quarantine regulations. These men are highly trained experts, and their chief duty is to prevent the introduction of diseases from foreign countries into the United States. They may be said to form the "far-flung" skirmish line in our constant battle against disease. They literally rub elbows with death every day in the year, and have their roll of honor on which appear the names of those who have died or become infected in the service.

Let us call the roll:

McClintock died of Rocky Mountain spotted fever while investigating that disease in the Bitter Root Valley.

Wightman died of yellow fever at Guayaquil, Ecuador, while in a fight against yellow fever, smallpox and plague in order to prevent their introduction into the United States!

Groenvelt, Glazier, Brannon, Bratton all died of yellow fever!

Miller died of typhoid fever while investigating that disease!

Richardson died of typhoid fever during a yellow fever campaign! Other names that could not be secured belong on this roll.

Of those living, Lloyd, McKeon, Glennan, Guthrie Rucker, Goldberger and many others have had yellow fever!

Long and McLaughlin have had cholera!

Holt and Nydegger have had amebic dysentery!

Goldberger, McCoy, Amesse and several others have had dengue!

Goldberger has had typhus!

The value of the work done by these men cannot be measured in dollars and cents, or figured in human lives. Every step of it depended on experiments, the results of which indicated the logical method of excluding diseases from our shores.

Shall we call a halt on future experiments or "be here dedicated to the great task remaining before us" and, "from these honored dead take increased devotion to that cause for which they gave the last full measure of devotion"?

Vivisection! It has revealed man at his best, almost on a par with the Man of Calvary.

It has done much, and points the way for much more than remains to be done.

It has replaced conjecture with fact, substituted cold logic for a suspicion of the truth, transformed a figment of the imagination into a reality.

It has substituted hope for despair, exchanged funeral trappings for the laughter of children.

It has relegated to the dark ages the monstrous belief that somewhere beyond the clouds lives a being so steeped in envy that he rebukes love for children by unloosing the plagues. It has robbed God of those human attributes, malice, envy, hatred and revenge.

It has substituted exact laboratory methods for incantations and charms; a quarantine based on exact knowledge, for one founded on brute force and fear.

It has removed the greatest obstacle to the South's material development and made the tropics a white man's country, where he can take up his burden unafraid. It has gathered the plagues from the four corners of the earth and safely imprisoned them in laboratory test tubes.

This record of achievement is our justification for past experiments, our argument for their continuance.

IS INSANITY ON THE INCREASE?

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During the past several decades the number of insane in institutions has been increasing at a faster rate than the general population. Thus, according to the United States census statistics there were, in 1880, 81.6 patients in institutions for the insane per hundred thousand of the general population; in 1910 the number had risen to 204.2. To what extent, if any, does this fact indicate an actual increase in the prevalence of insanity in the American population?

There can be no doubt that, at least to some extent, the increase of patients in institutions is due merely to the general improvement in the kind and adequacy of facilities for their care; and if the statistics of various states for any one year are compared with one another, marked differences are found, corresponding to stages of progress in social organization, and altogether analogous to those shown by the entire country in years separated by decades.

Thus, for instance, in 1910 there were in the state of Oklahoma 67 patients in institutions per hundred thousand of the general population, while in the state of Massachusetts there were 344.6; and between these extremes all degrees of transition were presented by the statistics of other states.

It is obvious, therefore, that the number of patients in institutions, either in the entire country at different times or in different parts of it at any one time, cannot be taken as a correct measure of the prevalence of insanity among the people.

For this reason, attempts have been repeatedly made to enumerate the total number of insane persons both in and out of institutions in the various states.[1] The resulting data were, however, so manifestly untrustworthy that eventually it became apparent that the difficulties inherent in such an undertaking were greater than, for the present, we can cope with successfully, and such attempts have, accordingly, been given up.

Of these difficulties the greatest and, perhaps, the sole insurmountable one is that of formulating such a definition of insanity as to enable enumerators readily and uniformly to distinguish between sane and insane persons under all conditions.

Furthermore, whoever is familiar with psychiatric clinical material knows that, owing to the nature of things, even if it were possible to formulate a definition and thereby draw a line sharply distinguishing,

1. U. S. Census from 1850 to 1890.

for practical purposes, sanity from insanity, the line could be thus drawn only in relation to some more or less arbitrary standard of normality.

The need of standards of normality is felt not only in connection with attempts of enumeration of the insane in communities, but also in daily practice in connection with every case of alleged insanity in which commitment to an institution is sought; and in this respect the practice of the various states, varying as it does within wide limits, indicates the application of a whole series of fairly distinct, though not readily definable, standards.

Thus, referring again to the instances presented by Oklahoma and Massachusetts, significance attaches mainly to the consideration that there are undoubtedly many persons residing in the former state who are at large and whom, moreover, their fellow citizens do not consider proper subjects for an insane hospital, who would be promptly committed if they took up their residence in the latter state. In the last analysis, it is a difference in tacitly accepted standards of normality that accounts largely for the fact that in Oklahoma, as already stated, there were but 67 patients in institutions per hundred thousand of the general population, while in Massachusetts there were no less than 344.6; and similar differences in standards no doubt account for the analogous contrasts presented by statistics of the insane in institutions in the entire country at different times.

Persons are placed in institutions when, by reason of some mental defect or disturbance, their adaptation to their environment fails. The environment of a highly organized community with high standards of living is, of course, more exacting than that of a community characterized by a more primitive organization and lower standards.

Whatever may be one's theoretical conception of insanity, the line of division between it and the normal condition, as it is indicated by the practice of communities, is a shifting one, moving from the abnormal toward the normal extreme with the progress of civilization and the concomitant elevation of social standards.

These considerations are of importance, as they point a way to an indirect method of investigating the question which is before us, Is insanity on the increase? For, although it would be, of course, impossible to apply a newly selected standard to conditions in the remote past concerning which we have no information other than that recorded by contemporary observers, it is at least within the bounds of possibility to apply such a standard in studying conditions in various parts of the country as they exist in our own time.

The states east of the Mississippi River may be divided into a Northern group, comprising Connecticut, Illinois, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont and Wisconsin; and a Southern group, comprising Alabama, Delaware, Florida, Georgia, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia and West Virginia.

Facilities for the care of the insane have at all times been relatively more ample in the Northern group of states, and, accordingly, the number of patients in institutions in relation to the general population has always been greater, as shown in the accompanying table.

The difference between these two groups of states is certainly very striking. From what has been said, it would follow that the question, To what extent does this difference correspond with a real difference in incidence of insanity? is lacking in definiteness. It may be better expressed as follows: If the populations of the two groups of states, or representative portions of them, were exposed to the same environmental conditions, would there still be a difference between them as to the proportion of patients contributed to insane hospitals; and, if so, which group would contribute the higher proportion and how great would be the difference?

One advantage in thus expressing the question is that it affords a suggestion of a method for seeking an answer.

A number of circumstances, such as availability of good statistics, the prevalence of high social standards, the composition of the population which is in certain respects peculiar, etc., combine to make the experience of the state of California worthy of special study in this connection.

The growth of the population of that state has for a number of decades been in large part by immigration from other states, especially those east of the Mississippi River. This fact has created an opportunity of making a comparison such as we desire to make, in order to find an answer to the question that

NUMBER OF INSANE IN INSTITUTIONS PER HUNDRED THOUSAND OF THE GENERAL POPULATION IN CERTAIN YEARS IN TWO GROUPS OF STATES EAST OF THE MISSISSIPPI RIVER

	Census Years			
	1880	1890	1904	1910
Northern group	104.9	145.1	230.7	256.6
Southern group	48.8	79.7	117.5	132.3

is before us, by noting the number of admissions to the state hospitals of California contributed by natives of the above-mentioned two groups of states who have taken up their residence in California.

If the incidence of insanity differs materially in these two groups of states, it would seem that the difference should be revealed by this comparison—one that is made on the basis of a standard which, though not to be theoretically formulated, is nevertheless fairly definite, uniform and readily applicable, namely, the standard of the prevailing environmental conditions of California.

During the biennial period ending June 30, 1910,[2] the natives of the Northern group of states residing in California furnished 147.3 admissions to the state hospitals of California per hundred thousand of their general population. During the same period the natives of the Southern group of states furnished 166.7 admissions per hundred thousand: a difference of 13.1 per cent.

In other words, as far as may be judged from these statistics, the Southern states east of the Mississippi River, which have had for many years, and still have, poorer and less adequate facilities for the care of their insane than the Northern, now show a higher incidence of insanity in their population.

Thus it would seem that the much greater relative number of insane in institutions in the Northern group of states is but an indication of a more thoroughly

2. Seventh Biennial Report of the State Commission in Lunacy of California.

carried out policy of segregation, and appears to have already produced a demonstrable eugenic effect: for the application of a common standard to representative portions of the two population groups reveals evidence showing that the incidence of insanity is actually greater in the Southern group.

Similarly, it would appear that the progressive increase in the relative number of institution inmates, observed throughout the country during the past several decades, is also but an indication of more thorough segregation which has, in all probability, been attended by the same eugenic effect.

I conclude, then, that such evidence as is available, far from showing that insanity is on the increase, tends to show rather that it is on the decline.

THE VALUE OF A SANITARY SURVEY IN THE TEACHING OF HYGIENE

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It may be a surprise to the readers of THE JOURNAL to learn that hygiene is included as a major subject in the curriculum of only three medical schools in this country, namely, the University of Pennsylvania, the University of Michigan and Harvard.

The teaching of hygiene is becoming increasingly difficult, on account of the widening scope of the subject, including preventive medicine, sanitary engineering, vital statistics, epidemiology, industrial hygiene and public health activities generally. It has become necessary to establish special schools with graded courses to meet the demand of training men to become public health officers. It is slowly being recognized that the training received for the M.D. degree, even in our best medical schools, does not properly fit a man to enter public health work. Sanitation and hygiene has become a separate profession.[1]

At the Harvard Medical School, the teaching of hygiene in the required course consists of (*a*) lectures and demonstrations; (*b*) laboratory work; (*c*) sanitary excursions, and (*d*) sanitary survey. This required course comes in the second year of the medical curriculum. Special emphasis is laid on the laboratory work and the sanitary survey, for these exercises are regarded as the backbone of the course. As to the sanitary excursions, I take the class to the Antitoxin and Vaccine Laboratory, to a large city milk plant, to quarantine and other places of sanitary interest that may be examined to better advantage by a personally conducted tour than by individual visits. In addition to the required course, a fourth year elective is offered for those who desire to dip a little deeper into some phase of the subject.

The sanitary survey was first used as a method of instruction in the School for Health Officers of Harvard-Technology and met with such signal success that I later introduced it into my course in preventive medicine and hygiene at the Harvard Medical School.

Each student in medicine is required to make a sanitary survey of some city or town and to submit a report thereon. The report must consist of three elements: A, collection of data; B, interpretation of the facts; C, criticisms and recommendations. From the following outline, which is placed in the hands of each student, some idea of the general plan and scope of the sanitary survey may be obtained:

WATER:

(a) The water shed—sources of pollution, methods of collection, storage, purification.
(b) Public or private wells.
(c) Examine a sample of the water in your laboratory exercise; interpret results.

SEWAGE:

(a) System—if purified or treated, how?
(b) Efficiency.
(c) Relation to health of this or other towns.

GARBAGE, REFUSE, ASHES:

(a) Method of collection.
(b) Disposal.
(c) Relation to health.

VITAL STATISTICS:

(a) Death rate.
(b) Infant mortality.
(c) Specific rates for:
  (1) Typhoid.
  (2) Tuberculosis.
  (3) Measles.
  (4) Scarlet fever.
(d) Submit samples of blanks used by the department of health, especially those for deaths, births, marriages, and notifiable diseases. Fill out a death certificate and a birth certificate. Give a list of the diseases, notification of which is required by the board of health. Give criticism of activities, including distribution of educational and other pamphlets issued by the board of health.

MILK:

(a) Report on the sanitary condition of one farm and one dairy. Use score card.
(b) Amount of milk pasteurized and by what method.
(c) Amount of milk "certified." If possible visit and report on farm producing it.
(d) Examine a sample of the milk in your laboratory exercise; interpret results.

SANITARY NUISANCES:

(a) Sources of odors.
(b) Dust—causes and method of prevention.
(c) Rubbish and general cleanliness. Empty lots.
(d) Flies and mosquitoes.
(e) Rats and vermin.
(f) Stable and manure.
(g) Breeding places of mosquitoes.
(h) Smoke.
(i) Unnecessary noises.
(j) Piggeries.
(k) Legal definition of a nuisance, and method of preventing or abating nuisances.

INDUSTRIAL HYGIENE:

(a) Sanitary condition of one tenement, based on an inspection.
(b) Ventilation of one large building.

TUBERCULOSIS:

What measures are taken to prevent its spread?
Should some other disease be prevalent, what measures are taken to control it?

SCHOOLS:

(a) Visit and report on one school—ventilation, lighting, temperature, cleanliness, toilets, playgrounds, etc.
(b) Medical inspection of schoolchildren. How conducted?
(c) Diseases for which children are excluded from school.

1. Rosenau, M. J.: Courses and Degrees in Public Health Work, THE JOURNAL A. M. A., March 6, 1915, p. 794.

MISCELLANEOUS:

(a) Markets.
(b) Provision stores.
(c) Slaughter houses.
(d) Cold storage plants.
(e) Kitchens of hotels and restaurants.
(f) Wharves.

SUMMARY—Including:

(a) Criticisms of health activities and administration.
(b) Recommendations.

Boston is favorably circumstanced for an exercise of this character, there being fifty-two cities and towns within 15 miles of the State House. Students are encouraged to select small communities rather than towns or cities. The student's home town or the place in which he is living may be selected with particular advantage. Some students prefer to make their sanitary survey during the pleasant days of summer, after they return home, and thus devote more time to it than is possible during the busy school term.

No special instructions are given to the student as to how to proceed with the sanitary survey, it being the intention to place the student on his own initiative, in order to bring out tact and self-reliance. Students are simply advised, first, to get acquainted with the town and some of its people; to find out something about its history, geology and geography; then to take up the water supply, sewage disposal, milk supply, schools, industries, tenements, nuisances, etc.; finally, to visit the health officer, when the student not only will be prepared to profit by the information given, but also will probably be in a situation to surprise the health officer with some facts about his town which have escaped notice.

One happy result has been that some towns have employed the student making the sanitary survey as health officer. This has been the case with William E. Brown, at York, Maine, Charles Francis Horan, at Watertown, and Andrew F. Allen, at Waltham, Mass., all of whom were students in the School for Health Officers of Harvard-Technology. The survey designed primarily as an educational excursion for the student has therefore carried the doctrine that "public health is purchasable" into many places, some of which have at once realized that the best way to obtain the benefits of preventive medicine is through the agency of a well-qualified and full-time health officer.

In the crowded medical curriculum, little time can be spared for an exercise of this character. All the students in the second year class at the Harvard Medical School, however, have in some way found the time. A few afternoons during the course are set aside for the purposes of the survey, but much of the work is actually done on Saturday afternoons, Sundays and holidays. The students themselves feel that the benefit derived fully compensates for the extra work. A certain amount of the work, such as visiting water sheds, dairies, looking for nuisances, etc., is done in the spirit of a walking excursion or a picnic.

Some of the reports prepared by second year medical students are splendid contributions, giving a complete account of all the important sanitary and hygienic features of the place studied. Many of the reports are enlivened with photographs showing good and bad sanitary conditions. Most of them have carefully prepared charts showing morbidity and mortality rates; and some of them have a judicious summing up, with a well-considered criticism of the defects in the health administration of the town.

Another advantage of the sanitary survey is that it adds much interest to the course in hygiene and helps enliven the laboratory exercises. This correlation between the field work and the laboratory work is accomplished in part by having students bring a sample of the water supplied the town they are studying, when they make a water analysis in the laboratory. The same applies to samples of milk, of air and other specimens for sanitary analysis.

The world-old questions of pedagogics have arisen anew to plague those who are devoting their attention to teaching the new profession. The use of the sanitary survey as a pedagogic instrument is worthy of consideration by teachers of hygiene.

ABORTIVE TREATMENT OF TYPHOID FEVER BY SENSITIZED TYPHOID VACCINE SEDIMENT*

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A historical survey of attempts at specific therapy in typhoid fever shows that two distinct eras may be arbitrarily noted. Beginning with the work of Fraenkel[1] (1893) until 1912, there were numerous reports on the somewhat favorable action produced by ordinary killed or even living typhoid vaccines. The results obtained by a number of observers in about 800 cases are by no means striking, but indicate that the subcutaneous injection of various typhoid vaccines would seem to shorten the course of the disease, to lessen the number of relapses and complications, decrease the mortality, and to lead to some symptomatic improvement. In a few instances, abortive cures have been mentioned, which apparently bear a relation to the injection of the vaccine; but such cases are known to occur without any specific treatment.

In the last two or three years, certain modifications have been used in the vaccines and far more convincing results obtained, and we have been led to hope that a true specific therapy may eventually be possible. These modifications are, first, the introduction of the intravenous injection instead of the subcutaneous, and, second, the use of sensitized vaccines. Kraus,[2] among others, has reported a relatively large number of abortive cures following the intravenous injection of Vincent's typhoid vaccine, and still more favorable results have been reported by Ichikawa,[3] who used typhoid bacilli that had been treated with the serum of patients convalescent from typhoid fever (sensitized vaccines). Both of these results have since been confirmed by the work of Ditthorn and Schultz,[4] Goldscheider and Aust,[5] Paltauf[6] and others.

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* This work was planned and begun in collaboration with Edith J. Claypole, whose regrettable death on March 26, 1915, deprived the author of an invaluable associate, and medical science of an able and inspired contributor.

1. Fraenkel: Deutsch. med. Wchnschr., 1893, xix, 958.
2. Kraus: Wien. klin. Wchnschr., 1914, xxvii, 1443.
3. Ichikawa: Sei-I-Kwai Med. Jour., 1915, xxxiii, 73.
4. Ditthorn and Schultz: Med. Klin., 1915, xi, 100.
5. Goldscheider and Aust: Deutsch. med. Wchnschr., 1915, xli, 361.
6. Paltauf: Wien. klin. Wchnschr., 1915, xxviii, 125.

Following our work on the experimental prevention, or cure, of the typhoid carrier condition in rabbits, Dr. Claypole and I[7] expressed our intention of transferring our results to the treatment of typhoid fever in human beings, largely on the basis of the phenomena of specific hyperleukocytosis which we have described. We found, in brief, that the injection of typhoid bacilli in immunized rabbits, or the injection of sensitized typhoid bacilli in normal rabbits, gave rise to a hyperleukocytic crisis which occurred about eighteen hours subsequently, and was accompanied by a complete destruction of the injected living bacteria in the animal's body. Although we had in mind the treatment of patients by means of the killed, sensitized typhoid vaccine sediment, which we had developed for the prophylactic immunization of human beings, before the publications of Kraus and of Ichikawa, it is only recently that it has been possible to carry out our intention. Owing to the courtesy of a number of physicians in Oakland, Berkeley and San Francisco we have been able to treat twenty-two cases of typhoid fever by the intravenous injection of this modified, sensitized vaccine. In all cases the diagnosis was verified by blood culture and Widal reaction. In seventeen of these cases it has been possible to carry out the treatment exactly as intended, and in this limited number we have produced an abortive cure in eight, or 47 per cent., following either a single or two or three injections. The average day, in these cases, on which the temperature reached normal permanently and the patient was symptomatically well, was the nineteenth. In no case have dangerous symptoms, referable to the vaccine, been noted when moderate doses were used. The best dose, apparently, corresponds to about 300 million micro-organisms, and this dose, in an adult produces the characteristic reaction on which the abortive cure apparently depends. This reaction, as other recent observers have mentioned, consists in a chill within half an hour following the injection, accompanied by a rise in temperature of 1 or 2 degrees, followed by a fall in temperature to normal or subnormal in from twelve to twenty-four hours. We find that the initial rise in temperature is accompanied by leukopenia and the corresponding fall by hyperleukocytosis which, in some cases, has reached as high as from 20,000 to 40,000 per cubic millimeter. The increase is due almost entirely to polymorphonuclear leukocytes. The fall in temperature is invariably accompanied by symptomatic amelioration, and in successful cases the temperature either remains normal, or with a few fluctuations reaches a permanent normal in a day or two. We are not able to state, as yet, what relation the presence or degree of hyperleukocytosis may bear to the recovery.

Another significant fact is that the cases which were apparently cured by this treatment have all given a positive Widal reaction, and usually in high dilutions, for example 1:320 or 1:640. In two of the nine cases that were not abruptly cured, the Widal was negative in a dilution of 1:10 and remained so, and in none of these cases did it exceed a dilution of 1:80. This suggests, at least, that the cure is due to the cooperation of the hyperleukocytosis and the presence of substances antagonistic to the typhoid bacilli in the serum. Such a combination would give the ideal condition for the destruction of the typhoid bacilli which may exist in the patient's body. These observations further suggest that a higher percentage of successful results might be obtained by treating patients, particularly when the Widal is negative, by a combination of sensitized vaccines and immune serum.

7. Gay, F. P., and Claypole, E. J.: Specific Hyperleukocytosis, Arch. Int. Med., November, 1914, p. 662.

A SIGN DIAGNOSTIC OF HYPERPLASTIC THYMUS

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Following light ether and oxygen anesthesia and the enucleation of enlarged tonsils, a young woman, aged 22, under my care at the Flushing Hospital (private, serial No. 251), developed severe reactive symptoms which led to a diagnosis of hyperplastic thymus. In this manner, my attention, like Crotti's,[1] was called drastically to the possibility of discovering this condition prior to operation. Since that time, several cases have been studied, methods of diagnosis perfected and the following sign, which appears during fluoroscopic examination of the chest, uncovered.

Delicate shadows corresponding to the lateral borders of the thymus and the shadows internal, move outward and inward with each cardiac systole and diastole. In uncomplicated cases, there is no movement with respiration even when a deep breath is taken. On the contrary, shadows which represent the bronchial tree move upward and downward with each inspiration and expiration and show only slight cardiac movement in the immediate neighborhood of the lung roots.

By Roentgen ray, no two thymus glands present the same outline. They may be classified, however, according to their apparent position into two varieties. The first, smaller, rounded, lies just below the "critical space of Grawitz" or the superior outlet of the thorax. The shadow of the upper border is lost behind the sternoclavicular articulations and that of the first ribs. Laterally, this shadow appears in the second interspace, more particularly toward the left. It encloses on the left the shadow of the aortic arch, and as that organ moves in young persons, it gives movement to the thymus shadow. There is little or no movement in the right interspace. The lower border of the thymus in this type rarely reaches lower than the lower border of the third rib.

The second type fits over the base of the heart like a toboggan cap. The lower border may reach downward as low as the sixth rib. Laterally, the shadow will be found to conform to the percussion boundaries usually given in the textbooks on medicine.

Usually, though not always, the shadow is more marked toward the left; I have seen one case in which the left lateral border measured 4½ inches from the median line. Toward the right the border may extend 3½ inches from the median line. The appearance of such a shadow is apparently characteristic. It is denser than contiguous lung tissue. The portion overlying the left auricle moves outward and upward; that overlying the left ventricle, outward and downward; that overlying the right auricle moves to a less extent than the portions previously men-

1. Crotti, André: The Roentgen Ray in Intrathoracic Goiter and Thymus Hyperplasia, THE JOURNAL A. M. A., Jan. 11, 1913, p. 117.

tioned, but the movement is distinctly outward and slightly upward. The movements of each segment differ in time, conforming to the movement of the segment of the heart beneath.

Occasionally a thymus will be found which gives four lateral borders by fluoroscope and plate, two on each side. The pair internal lie close to the borders of the sternum. The second pair is seen at a considerable distance externally. It has been supposed that the two inner lines represent the lateral borders of a median lobe, and that the lines external represent the external lateral borders of two lateral lobes.

I have attempted to conform Boggs' sign[2] to this method of examination, but have failed to confirm it. Boggs asserted that the percussion border of the hyperplastic thymus moves upward and downward with extreme extension and flexion of the head. This sign is sometimes obscured by evidences of former tuberculous processes, and especially pleural adhesions. A study of the movements previously detailed considered in connection with evidences of such conditions will lead to a correct interpretation.

Possible sources of error should be kept in mind as follows:

1. A hyperplastic third or inferior lobe of the thyroid sometimes occupies a position in the critical space of Grawitz. I have not seen such a case, but on theoretical grounds believe that the shadow would be more dense than a thymus persistans. It should not be forgotten that at least 90 per cent. of enlarged thyroids are accompanied by hyperplastic thymus glands. The shadow of a thyroid lobe in this position should rise and fall in the act of swallowing.

2. The absence of a characteristic thymus shadow does not exclude its presence. Hyperplastic thymus tissue sometimes extends from the base of the tongue to the apex of the heart. It may hide behind the sternum, so far as the fluoroscope is concerned, enlargement having taken place in an anteroposterior direction (Halsted[3]).

3. A thymus shadow may be cast by the fat which replaces the lymphoid tissue during the normal involution of that gland. It appears doubtful if this could cause confusion to the extent of a positive error in diagnosis. It should not be forgotten that hyperthymization (Svehla) may possibly arise from a very small and insignificant persisting remnant, the presence of which could not be directly diagnosticated by any method now available.

4. The differential diagnosis between thymus hyperplasia and mediastinal tumors presents no unusual difficulties. The appearance of pressure on the bronchial tree is conclusive. The obstruction which blood presents to the passage of the Roentgen ray gives a characteristic appearance to aortic aneurysms.

2. Boggs: Tr. Assn. Am. Phys., 1911, xxvi, 353.
3. Halsted: Harvey Society Lectures, 1913-1914, Series 9, p. 241.

The Mental Hospital of the Future.—In the hospital for the insane of the future there will be no locks and bars or secured doors and windows. For these means of restraint there will have been substituted plain, human, socialized intelligence. Wards will be on the ground floor. Physicians and nurses will be, not only technically trained in a distinct and recognized profession, but they will have received in addition a knowledge of practical psychology and sociology. The social problems involved in the insane and in their care and treatment, will be given as careful consideration as the medical problems.—*Institution Quarterly* (Ill.)

STUDY OF LATER CASES OF SCARLET FEVER OCCURRING IN BROOKLYN

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In an article by G. B. Young,[1] Commissioner of Health of Chicago, justification is apparently furnished for the classified quarantine of cases of scarlet fever and diphtheria as enforced in that city at the present time. Statistics given by Young are reproduced in Tables 1 and 2.

TABLE 1.—SCARLET FEVER IN CHICAGO, MARCH 15, 1914, TO NOV. 1, 1914 (FROM YOUNG)

	No. of Cases	Secondary Susceptibles	Secondary Cases	Secondary Per Cent.
A Quarantine	92	112	1	1.087
B Quarantine	306	234	16	5.22
C Quarantine	870	865	60	6.9
Hospitalized	430	315	10	2.32

TABLE 2.—SECONDARY CASES OF SCARLET FEVER IN NEW YORK CITY (FROM YOUNG)

	No. of Cases	Secondary Cases	Per Cent.
Quarantined at home	1,003	91	9
Removed to hospital	327	20	6

The statistics quoted under Table 2, showing secondary cases in New York City, were so out of proportion to those of Chicago, as shown in Table 1, that a study was undertaken of 1,610 cases of scarlet fever occurring in Brooklyn at about the same period, namely, March to December, 1914.

The term "later cases" has been used in preference to "return cases," which is evidently a misnomer as applied to cases of scarlet fever. The term "later cases" as used in this study applies only to those later cases whose onset is subsequent to the first report received by the department of health of a case of scarlet fever. If four cases in a family were reported by the attending physician at the same time, even though the onset of each varied, they were considered as four primary cases, provided no previous case had been reported in this family. This procedure is justifiable inasmuch as this study is one to determine the value of quarantine in relation to later cases, and the responsibility of the department of health begins from the date of receipt of the first report of a case.

The health department of the city of New York maintains only two classes of quarantine, namely, "observation" and "supervision" cases.

A. *Observation Cases.*—Cases which require infrequent visits to maintain proper isolation. This may mean a number of things. The house may be a private dwelling, two-family house or tenement, but the intelligence of the people and their desire to maintain isolation must be evident. A trained nurse may or may not be in attendance. The number, location of rooms, size of family and the presence of susceptibles are considered in determining if the case should be considered as an observation case.

B. *Supervision Cases.*—Those in which it is evident that proper isolation will not be maintained without careful watching on the part of the field force. In these cases, when violations of proper isolation

1. Young, G. B.: Occurrence of Return Cases of Scarlet Fever and Diphtheria, THE JOURNAL A. M. A., Feb. 6, 1915, p. 487.

are noted, the attending physician is first notified and a patrolman sent to warn the family that removal to the hospital will be forced if a second violation occurs. On the second report of failure to isolate properly, removal to the hospital is forced.

The determination as to class of case is left entirely to the judgment of the field worker, the district nurse. At the time of her first visit in making out her history card, Form 20-J, she notes on the reverse side "observation" or "supervision" case and the date on which the patient is to be revisited. The supervision case must be visited every two or three days, while an observation case may be completed in two visits—the primary visit when history is taken and the final visit when case is terminated. As the quantity of work is very large at times, the number of field workers too meager; and as nurses are human, the temptation to consider cases as "observation" instead of "supervision" occurs, and the lack of proportion between the two classes of cases, as shown in the study, is evidence that it has been easy to yield to temptation.

Quarantine, as understood by the district nurse, applies to the patient alone; others, with the exception of attendants, are kept from coming in contact with the patient who is considered the source of infection.

TABLE 3.—CASES STUDIED

Character of Dwelling	Number of Cases	Adults	Susceptible Children	Later Cases	Removed to Hospital	Quarantined at Home	Observation Cases	Supervision Cases	Percentage of Later Cases to Reported Cases	Percentage of Later Cases to Susceptible Children
Tenement houses	1,000	1,887	1,310	46	239	761	641	120	4.6	3.51
Private houses	237	563	318	6	24	213	203	10	2.53	1.88
Two-family house	332	679	520	18	35	317	291	26	5.11	3.07
Boarding house	17	70	18	0	12	5	4	1		
Lodging house	0	0	0	0	0	0	0	0		
Miscellaneous	4	8	5	0	0	4	4	0		
Total	1,610	3,207	2,171	70	310	1,300	1,143	157		

A hanging card is left with the family giving instructions under the head of "Precautions" as follows:

During the illness, all unnecessary furniture, such as curtains, carpets and pictures, should be removed from the sickroom.

Dogs, cats and other pets should be kept out of the sickroom, as they often carry the disease to others.

Discharges from the mouth, throat and nose should be received on cloths and immediately burned or boiled.

Bed linen, towels, napkins, etc., should be disinfected by soaking in a solution of 2.5 per cent. carbolic acid. This should be done before goods are removed from sickroom. These goods should then be boiled in soap suds for one-half hour. The patient's nightgowns, sheets, etc., should be soaked in the solution of carbolic acid and washed in hot soap suds.

Dishes and utensils used by the patient should be kept in the sickroom until recovery, unless scalded with boiling water before removal. The nurse or attendant, while in the sickroom, should wear a special gown or outer garment, completely covering her clothing. On leaving the room, she should soak her hands in a disinfecting solution and then wash them in hot soap suds. Urine and stools, immediately after being received in a vessel, should be covered with an equal quantity of a solution of one tablespoonful of chlorid of lime in one quart of water, and allowed to stand fifteen minutes before emptying.

Upon recovery, the patient should be bathed and hair washed in warm soap suds, then dressed in clean clothes which have not been in the sickroom.

The members of the family and the attendant are not prevented from using public halls, and entering public conveyances or places of assembly. If the patient is properly quarantined, children in private houses may attend public school on special school per-

TABLE 4.—PERCENTAGE OF LATER CASES

	Number of Cases	Later Cases	Percentage
Observation	1,143	46	4.02
Supervision	157	13	8.28
Entered Hospital	310	11	3.54

TABLE 5.—LATER CASES

Case Number	Age, Years	Onset of Primary Case	Date of Placarding	Onset of Later Case	Primary Case Removed to Hospital	Observation	Supervision	Character of House	Number in Family	Number of Rooms
1	2	6/19	6/22	7/ 9	....	Yes	....	Ten.	5	4
2	7	8/13	8/15	8/26	....	....	Yes	Ten.	7	4
3	4	7/16	7/18	8/10	....	....	Yes	2 Fam.	8	6
4	7	6/25	6/27	6/30	....	Yes	....	2 Fam.	6	7
5	9	8/23	8/25	8/31	8/25	....	....	2 Fam.	6	5
6	14	8/13	8/18	8/16	....	Yes	....	2 Fam.	7	5
7	7	6/22	8/18	8/13	....	Yes	....	2 Fam.	7	5
8	3	8/13	8/18	9/ 2	....	Yes	....	2 Fam.	7	5
9	4	7/26	7/30	7/31	....	Yes	....	Ten.	6	4
10	16	6/14	6/20	7/ 3	....	Yes	....	2 Fam.	7	6
11	5	6/24	7/ 7	7/10	....	Yes	....	Ten.	6	8
12	3	6/24	7/ 7	7/10	....	Yes	....	Ten.	6	8
13	20*	6/24	7/ 7	7/10	....	Yes	....	Ten.	6	8
14	7	4/20	4/25	4/27	....	Yes	....	P. H.	10	6
15	4	4/20	4/25	4/27	....	Yes	....	P. H.	10	6
16	2	5/27	5/29	6/ 6	....	Yes	....	Ten.	4	4
17	3	5/26	5/29	5/30	....	Yes	....	2 Fam.	6	6
18	6	4/ 6	4/10	4/19	....	Yes	....	P. H.	6	10
19	13	4/21	4/28	5/ 6	....	Yes	....	P. H.	6	8
20	4	5/ 5	5/13	5/15	....	Yes	....	Ten.	8	5
21	6	3/12	3/16	3/18	....	Yes	....	2 Fam.	6	7
22	4	4/29	5/ 4	5/15	....	Yes	....	Ten.	4	4
23	2½	4/14	4/20	4/27	....	Yes	....	Ten.	5	4
24	8	4/14	4/20	4/30	....	Yes	....	Ten.	5	4
25	9	4/20	4/22	5/14	....	....	Yes	2 Fam.	6	4
26	3½	4/20	4/22	5/13	....	....	Yes	2 Fam.	6	4
27	3	4/ 1	4/ 4	4/14	....	Yes	....	2 Fam.	6	4
28	2	4/ 1	4/ 4	4/14	....	Yes	....	2 Fam.	6	4
29	10	6/ 3	6/ 5	6/13	6/ 5	....	....	Ten.	5	5
30	6	6/13	6/15	6/28	6/15	....	....	Ten.	5	5
31	3	5/23	5/26	6/ 7	....	Yes	....	Ten.	5	4
32	2	4/ 8	4/11	4/17	....	Yes	....	P. H.	7	10
33	5	4/ 8	4/11	4/30	....	Yes	....	P. H.	7	10
34	10	3/15	3/18	4/16	....	....	Yes	Ten.	9	6
35	12	3/15	3/18	4/18	....	....	Yes	Ten.	9	6
36	8	5/ 7	5/ 8	5/17	....	Yes	....	Ten.	4	5
37	1	5/ 7	5/ 8	5/17	....	Yes	....	Ten.	4	5
38	3	4/15	4/18	4/22	....	Yes	....	Ten.	5	4
39	5	3/25	4/11	4/20	....	Yes	....	Ten.	6	7
40	2	3/25	4/11	4/20	....	Yes	....	Ten.	6	7
41	9	3/18	3/21	3/31	....	....	Yes	Ten.	13	5
42	3½	3/10	3/11	3/31	....	Yes	....	Ten.	6	6
43	1½	3/10	3/11	4/ 1	....	Yes	....	Ten.	6	6
44	9	3/10	3/11	4/10	....	Yes	....	Ten.	6	6
45	5	4/ 9	4/14	4/16	....	Yes	....	Ten.	5	4
46	9*	4/ 9	4/14	4/16	....	Yes	....	Ten.	5	4
47	1½	5/21	5/25	5/27	6/ 9	....	....	Ten.	4	4
48	6	3/28	3/31	4/ 1	4/ 2	....	....	Ten.	5	2
49	10	4/27	5/13	5/24	....	....	Yes	Ten.	3	6
50	5	5/ 4	5/ 7	5/28	....	Yes	....	Ten.	7	4
51	17	4/23	4/27	5/13	....	....	Yes	Ten.	5	4
52	2	4/24	4/29	5/ 9	....	Yes	....	Ten.	8	6
53	8	3/24	3/27	4/ 1	....	Yes	....	Ten.	6	2
54	6	3/24	3/27	4/ 1	....	Yes	....	Ten.	6	2
55	16	5/ 3	5/ 4	5/ 5	5/ 5	....	....	Ten.	6	5
56	16	4/15	4/22	4/22	....	Yes	....	2 Fam.	5	6
57	7	6/16	6/19	6/22	6/23	....	....	Ten.	5	3
58	9	5/28	6/ 1	6/ 3	6/ 5	....	....	2 Fam.	6	6
59	7	6/ 2	6/ 5	6/ 5	6/ 7	....	....	2 Fam.	6	6
60	4	6/ 5	6/ 8	6/12	6/27	....	....	2 Fam.	6	6
61	3	5/ 4	5/ 5	5/10	....	....	Yes	Ten.	4	4
62	2	5/ 2	5/ 9	5/13	....	....	Yes	Ten.	5	4
63	8	4/ 8	4/10	?	....	Yes	....	Ten.	9	4
64	10*	4/ 8	4/10	?	....	Yes	....	Ten.	7	4
65	6	4/ 8	4/10	?	....	Yes	....	Ten.	7	4
66	11*	6/ 8	6/11	6/13	6/17	Yes	....	2 Fam.	6	7
67	6	4/ 7	5/11	6/ 3	6/ 3	....	....	Ten.	5	4
68	3	3/25	3/30	4/11	....	....	Yes	Ten.	6	6
69	6	11/ 1	11/ 4	11/21	....	Yes	....	Ten.	4	4
70	7	11/12	11/14	11/19	....	....	Yes	Ten.	6	3

* Months.

mit without change of domicile, provided they are not susceptible or that the incubation period of five days has expired.

During the period during which this study was made, the duration of quarantine for scarlet fever was thirty-five days from the onset of the disease, provided there were no purulent discharges, and desquamation had ceased. At present this period has been decreased to thirty days, in accordance with the rules of the New York State Department of Health. There is no placarding of private houses or of two-family houses where there is separate entrance or exit to apartment. Tenement houses are placarded on the door opening into the public hall. In Table 3 is shown the number of adults in the family without reference to their susceptibility, as these data have not been required on history cards, and for this reason cannot be given.

In the seventy later cases there are twenty-five that appeared within five days from the date of placarding as follows:

1 day	7
2 days	9
3 days	2
4 days	3
5 days	4
Total	25

The incubation period of scarlet fever being taken as from one to five days, responsibility for the occurrence of the later cases cannot be charged against any method of quarantine. There are also other cases which should not be charged to faulty quarantine, as in Cases 11, 12, 13, 63, 64 and 65, and in which diagnosis was made by observing the presence of desquamation. In these cases the later cases, taking the date of their report as a guide in terming them such, are really the primary cases, and the case first reported the later one.

Cases 6 and 7 are also of interest and should be eliminated. In these cases the original case was diagnosed as diphtheria by the attending physician, cultures negative, onset June 22, placarded June 26, and terminated on negative cultures without fumigation July 23. Cases 6 and 7 were reported August 18 and placarded the same date.

Cases 36 and 37 are not chargeable to faulty quarantine methods. Primary case was diagnosed and reported as measles by attending physician, May 7, and placarded as such. The case was terminated in five days, and Cases 36 and 37 were not reported until May 21, with an onset May 17. Case 67 shows onset of primary case April 7, terminated and fumigation performed May 11, and onset of later case was June 3.

In Case 5, the primary case was removed to the hospital, and fumigation was done August 25. Onset of later case was August 31. In Case 29, the primary case was removed to the hospital June 5, and fumigation was performed June 6. The onset of the later case occurred June 13. In Case 30, the primary case was removed to the hospital and fumigation was performed June 15. Onset of the later case occurred June 28. In a study to determine the value of quarantine in preventing the occurrence of later cases, it is fair to eliminate these thirty-nine cases.

Of the remaining thirty-one cases, certain cases are of considerable interest. In Case 1, the residence of the susceptible child was changed at the time of placarding the primary case June 22. The onset of the later case was July 9, seventeen days subsequent to change of address. This would indicate a long period of incubation or that infection had been carried. Cases 2, 3, 25, 26, 34 and 35 were supervision cases. Violation of quarantine had been observed; a patrolman of the health squad was sent to warn, but before the cases could be forced to the hospital according to the present procedure, the later cases developed. Two cases occurred in children under the age of 1 year. One case (Case 51) occurred over the age of 16 years.

Thirty-one later cases occurring in 1,610 reported cases gives a percentage of 1.925 against 1.087 in Grade A quarantine in Chicago.

The proportion of later cases to susceptibles, *adults and children* in Grade A of the Chicago study is 0.8929 per cent. The proportion in the Brooklyn study, 2,171 susceptible children and thirty-one later cases, is 1.4279 per cent. This should not be considered proof of the efficacy of the Grade A quarantine of Chicago, however, as our study does not include adults, of whom there were 3,207, because we have no data to show the exact number who were susceptible. Furthermore, the percentage shown in the Brooklyn cases includes observation and supervision cases as contrasted with Grade A alone.

Finally, attention is called to the statement in the article by Dr. Young: "By 'secondary case' is meant one occurring among the susceptibles in the family at a date at least two weeks beyond the usually recognized limits of the period of incubation." It is extremely difficult to understand why this arbitrary limit of "two weeks beyond the usually recognized limits of the period of incubation" has been established by Dr. Young in the determination of later cases. This would be a period of nineteen days, and out of the seventy cases studied in Brooklyn, there were only ten occurring after this period. It seems evident that this is an error and that the method of quarantine may be questioned in any case occurring after the period of incubation has expired from the date that the case was quarantined and placarded, with certain exceptions as in cases noted above.

During the years from 1907 to 1914, the quarantine period for scarlet fever in Brooklyn was thirty-five days. No children in the infected family were permitted to attend school though residence was changed. On first evidence that isolation was not proper, without warning, the case was forced to the hospital. In view of the large increase in population and the fact that in 1914 the present liberal quarantine was in effect, the following statistics are of interest if the number of cases reported is in direct relation to the grade or excellence of quarantine:

Year	Cases	Year	Cases	Year	Cases	Year	Cases
1907	5,471	1908	8,236	1909	4,490	1910	6,810
1911	6,449	1912	4,649	1913	4,614	1914	3,716

The question presents itself: Is the present system of quarantine in New York City satisfactory? Two criticisms may be offered in reply to this question:

A. In six cases out of thirty-one, violations were noted and later cases developed before forcible removal could obtain. This would seem to indicate some modifications of the present procedure of forcible removal similar to Grade C of Chicago.

B. Out of 1,610 cases, 1,300 of which were quarantined at home and 761 of these in tenements with

2,575 susceptible children, only 157 were supervision cases.

The difficulty here is not in the spirit but in the number of field workers. Studies are made in a congested district, by a clever, bright, capable nurse, skilled in every way for the work in hand. On the basis of the number of calls which can be made by this trained observer, the number of field workers is determined, and it is evident that the same work cannot be accomplished by nurses of average ability in districts which are less congested.

The present system certainly interferes less with the school attendance of children and offers less hardship to the family. The study of 1,610 cases may not be sufficient to arrive at definite conclusions but it offers sufficient evidence to cast doubt on the conclusions that the system of classified quarantine in Chicago has justified itself. The weight of evidence would tend to show that the liberal quarantine of the health department of New York is the more justifiable, but this judgment should be supported by the study of a larger number of cases.

THE DIAGNOSIS AND TREATMENT OF GONOCOCCAL VULVOVAGINITIS IN INFANTS AND YOUNG CHILDREN

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The frequency with which gonococcal vulvovaginitis is seen in the young, the difficulty often experienced in demonstrating the specific micro-organism, and the extreme chronicity of this form of neisserian infection are known to most workers in this field of medicine. Vulvovaginitis may be due to various organisms, but, unfortunately, in the large majority of cases occurring among children, the gonococcus is the exciting factor. The combined statistics of Hurdon,[1] Koplik,[2] Romniceanu and Robin,[3] Dukelski[4] and Plomley[5] show that, in a large series of cases, 80.29 per cent. were due to the gonococcus of Neisser. For this reason, and because of the difficulty with which, as a rule, the organism can be demonstrated, all suspicious cases of inflammation in the vulvovaginal region should be treated as if they were of specific origin, until they are proved to be nonspecific. This is especially important in institutional work, in which the danger of transmitting the infection to other children is great.

During the acute stage of the attack, the gonococcus is usually readily isolated; later, however, when the disease has become chronic and the discharge is scanty, the organism can be demonstrated only with great difficulty. Not only is the demonstration of the gonococcus of importance in making the diagnosis, and, as a result of this, instituting appropriate treatment and safeguarding others against infection, but also it is of equal importance to determine from its absence, after a course of treatment, when a cure has been effected. In recent years the complement fixation and the cutaneous tests have proved of great value in the diagnosis of gonorrhea. Unfortunately, however, in the case of vulvovaginitis, the negative results obtained by these tests cannot be accepted as giving a free bill of health to the child. On the other hand, positive results are to be regarded as diagnostic in practically all cases in which the tests have been carried out by an experienced bacteriologist. It follows, therefore, that these tests are of secondary importance in determining when a cure has been effected — a point of great practical importance. In order to decide this question, we are, therefore, still compelled to rely, at least to a large extent, on the bacteriologic examination.

I have previously mentioned the difficulty with which the organism is demonstrated in chronic cases. This difficulty is increased in those cases which have received proper treatment, for the physical signs are often practically absent, and there may be little or no appreciable discharge. If, under such circumstances, the organisms are present in spite of the fact that they cannot be detected microscopically, treatment is likely to be discontinued, and, as a result, the disease assumes renewed activity, and the infection is greatly prolonged. It is of the utmost importance, therefore, for the clinician to be able to determine when the organisms are absent, and when they are present.

In 1910, Van Gieson[6] suggested a method of determining the presence of the gonococcus by examining the centrifuged washings of the vagina. I have employed this method for years in all doubtful cases, and have found that, by its use, the gonococcus can more readily be demonstrated. The following technic is employed: The child is placed in the Sims left lateral position, or, in the case of an infant, is held in the nurse's lap, with the buttocks elevated. The external genitalia are exposed and wiped with a cotton sponge wet with mercuric chlorid solution. The labia are next separated, and if any discharge is present, this is removed by means of a dull knife-blade or any similar instrument. The cotton swab usually employed for this purpose is of lessened value, since it tends to retain within the meshes of the cotton the cellular elements of the discharge, the most valuable elements, the demonstration of the organism intracellularly being of prime importance. Furthermore, the act of rubbing the swab over a glass slide has a tendency to destroy the pus-cells, so that when the smear is examined, more extracellular organisms will be found to be present. The smear obtained may be examined at once, and if found negative for gonococci, or if only an insufficient amount of discharge for examination can be secured, the following procedure is employed:

The patient is placed in an elevated position, so that the solution will not run out of the vagina, and with a soft, all-rubber eye syringe, about one-half ounce of 1:5,000 mercuric chlorid in normal salt solution is injected.[7] If the patient is in the proper position, and the bladder and rectum are moderately empty at the time of examination, the vagina will be ballooned out by the atmospheric air. This is an important detail. With the vagina thus partially filled with solution and thoroughly distended, a smooth glass rod is introduced and the various parts of the vagina are rubbed with it. This procedure is done for the purpose of detaching any adherent secretion. In cases in which

1. Hurdon, E., in Kelly and Noble: Gynecology and Abdominal Surgery, Philadelphia and London, 1907, ii.
2. Koplik: Jour. Cutan. and Gen.-Urin. Dis., 1893, ii.
3. Romniceanu and Robin: Wien. med. Presse, 1901, xlii, 1970.
4. Dukelski: Jahrb. f. Kinderh., 1904, lix, 397.
5. Plomley: Australasian Med. Gaz., Sept. 20, 1906, p. 455.
6. Van Gieson: Med. Rec., New York, June, 1910.
7. The making up of the mercuric chlorid in salt solution was suggested to me by Dr. John A. Kolmer. The organisms stain better and the pus and epithelial cells are fixed more readily with the salt solution than when a watery mercuric chlorid solution is employed.

the hymen is sufficiently stretched, the gloved index finger may be substituted for the glass rod. In a further effort to obtain material, the solution may be somewhat vigorously forced in and out a number of times with the syringe. The solution thus obtained is centrifuged for fifteen or twenty minutes at high speed, and the sediment examined in the usual way.

In suspected cases that yield negative findings by the means just described, or as a final measure to make assurance doubly sure, before discharging the patient as cured the following method is recommended: On the day prior to the bacteriologic examination, the entire vagina is painted with a moderately strong solution of silver nitrate, the strength of the solution varying somewhat with the age of the patient and the condition of the vaginal mucosa. Usually a 5 or 10 per cent. solution is sufficiently strong — it should be strong enough to produce a distinct reaction. On the following day, washings from the vagina are obtained, and these will often show gonococci that have been undemonstrable by other methods. In twenty-one chronic cases in which the method just described was used, the following results were obtained, demonstrating the value of the procedure: simple smear, positive, 45 per cent.; washings, 75 per cent.; washings preceded by chemical irritation, 97 per cent.

TREATMENT

In this, as in the treatment of any form of gonorrhea, cleanliness is of the utmost importance. The tendency of gonorrhea to become chronic is undoubtedly due to a large extent to the more or less constant reinfections by organisms from the depths of the infected tissues. The treatment here outlined is based on the following facts: Desiccation quickly destroys the gonococcus. The organism does not thrive on squamous epithelium, except that of the immature variety, such as is found in the vaginas of the young. Despite the fact that virulent organisms are constantly being deposited on the vulva and in the vagina, gonococcal inflammation of these areas is unusual in the adult. With these facts in mind, it is evident that cleanliness, drying, and the development of the vaginal mucosa should be important factors in the treatment.

TECHNIC

With the patient in the knee-chest or in the Sims position, or, in the case of an infant with the buttocks elevated by a nurse, the vagina is ballooned out until it is well distended. This occurs as soon as the intestines gravitate out of the pelvis, and the labia are separated. In the majority of instances, it is wise to sacrifice the hymen as soon as the diagnosis has positively been established, for its retention interferes materially with the treatment. In older children, this can be done under cocain anesthesia. The first one or two treatments may well be devoted to this step. In the case of older children, it is extremely important that the child's confidence be obtained, for only in this way will the physician secure cooperation in the treatment. This is best done by avoiding, so far as possible, the infliction of pain in the treatment. With the hymen obliterated, better drainage, more thorough treatment, and a greater degree of cleanliness can be maintained. The vagina is thoroughly washed with a weak solution of potassium permanganate. It is then swabbed with a 25 per cent. argyrol solution. The latter is employed chiefly as a cleansing agent. After the argyrol has been applied, the vagina should be dried as thoroughly as possible, a thin strip of gauze being used for the purpose, this having been found superior to cotton swabs. To complete the drying, an empty atomizer is used. In some cases it has been found necessary to insert a small wire speculum to maintain the dilatation of the vagina.

If the child is in the knee-chest position, it may now assume the Sims posture, which is more comfortable. The latter position is maintained for from twenty to thirty minutes, care being observed during this time to keep the vagina well distended with air. When this has been done, the vagina should be absolutely dry. As a final step, and with the vagina thoroughly distended, it is flooded with a weak solution of silver nitrate. At first about a 1 or 2 per cent. solution is employed, but as the vaginal mucosa becomes more fully developed, stronger solutions may be utilized. The addition of a little glycerin to the silver solution is of advantage. The treatment here described is administered three times a week, and during the interim the vagina should be washed out daily by the mother or nurse with either a weak potassium permanganate or an argyrol solution, a soft rubber eye syringe being employed. This is not a therapeutic, but a cleansing measure. When the case is in the hands of a nurse or of an intelligent mother, and especially in the case of children of from 5 to 10 years of age, the attendant may be taught to place the child once or twice daily in the Sims position, and to separate the vulva slightly, so that the vagina will become distended with air. This procedure not only tends to destroy all surface organisms, but also develops the squamous epithelium lining the vagina.

Much of the success of the treatment is dependent on the thoroughness with which the technic is carried out. If any detail is omitted, the cure will be delayed. This form of treatment is not, as a rule, applicable to dispensary patients, owing to the time required and the difficulty generally experienced in persuading the parents of these children to bring them regularly for treatment. The general history of these cases as commonly encountered is one of attacks of discharge, etc., interspersed with periods of more or less quiescence, during which the discharge is scanty or absent, and few or no subjective symptoms are present. Usually dispensary patients will bring their children for treatment only so long as the disease is active, and, as soon as the subjective symptoms are overcome, they neglect further treatment, with the result that an exacerbation subsequently occurs and the entire procedure has to be repeated.

It is safe to consider that a cure has been effected when negative findings are obtained after three consecutive bacteriologic and physical examinations, at two-week intervals, during which time no treatment has been employed, the last examination being preceded by the chemical irritation with silver nitrate previously described. As a matter of fact, four, or sometimes five, consecutive negative examinations are made, for washings are usually examined every two weeks, and treatment is continued until not only physical signs are absent, but also the washings prove negative. The first of the three test examinations is then made two weeks later. A cure was established in fourteen cases as the result of the preceding method of treatment in an average period of twelve weeks, the cure being regarded as dating from the day of the

first of the three consecutive negative examinations. Two weeks should be subtracted from this, owing to the fact that the first negative examination was made at that time. The most persistent case in the series lasted eighteen weeks, recurrence having taken place after two negative examinations, gonococci being found in the final test that had been preceded by the silver nitrate irritation. In this series no case was included that had not been treated regularly.

At the risk of repetition, I wish to emphasize again the necessity for observing thoroughness and regularity in carrying out the treatment. The disease is usually most persistent at or about the external os, the cervix being infected in practically all cases. The simple instillation into the vagina, often at irregular intervals, of various solutions, as frequently practiced, is, in my opinion, of little value in the treatment of this disease.

1503 Locust Street.

A SIMPLE OUTFIT FOR THE DISTRIBUTION OF TOXIN FOR THE SCHICK TEST *

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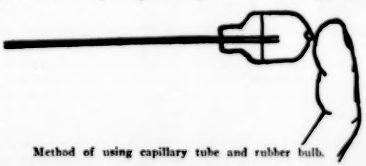
Owing to its reliability, the Schick test has found a constantly increasing field of application. In the Research Laboratory of the New York City Department of Health it has given us the greatest possible help in connection with work carried on at the Willard Parker Hospital during the past eighteen months. We[1] have tested 1,300 scarlet fever cases and have found 700 which gave a negative reaction. Not one of the negatively reacting patients developed clinical diphtheria, although they had received no immunizing injections of antitoxin and were constantly exposed in the wards to cases of diphtheria, and a certain proportion of them had become carriers of virulent diphtheria bacilli.



Method of using capillary tube and rubber bulb.

We therefore feel confident that a negative reaction means immunity, while a positive reaction indicates a probable susceptibility to diphtheria.

The great difficulty in popularizing the test and placing it within the reach of the general practitioner has been, on the one hand, the inconvenience of handling the undiluted toxin, and, on the other hand, the rapidity with which the diluted toxin deteriorates on keeping, either in solution or in tablet form. The outfit here described has been devised to furnish a standard amount of undiluted diphtheria toxin, which remains of fairly constant strength when kept in the icebox, and can be readily diluted when required. The outfit is supplied by the Department of Health free of charge in New York City. We have every reason to believe that it will be found convenient and reliable.

The operator should be skilled in the intracutaneous injection, and should consider all reactions as true unless able to differentiate the positive and pseudoreactions. A 1 c.c. record tuberculin syringe and a fine platinum-iridium or steel needle will be found suitable for the test. If the injection has been properly made, a small wheal-like elevation appears, which shows the distinct markings of the openings of the hair follicles. This elevation persists for two or three minutes. A positive reaction, which indicates that the individual is not immune to diphtheria through antitoxin at least, appears in from twenty-four to forty-eight hours, as a distinctly circumscribed area of redness and slight infiltration, which measures from 1 to 2.5 cm. in diameter. The redness increases in intensity during the next three or four days, persists for another week, and on fading gradually gives place to a brownish pigmentation, which always shows superficial scaling. The true reaction is characteristic of the irritant action of toxin on tissue cells, when there is no antitoxin to protect them. In the case of a negative reaction, which indicates an antitoxin immunity to diphtheria, the skin remains normal in appearance. The pseudoreaction, seen occasionally in older children and in adults, is not due to the irritant action of toxin, but is an anaphylactic response of the skin to the protein substance of the diphtheria bacillus, which is present in solution in the broth used for toxin. A similar reaction can be obtained with a dilution of the autolysate of the diphtheria bacillus, in which no toxin is present. The pseudoreaction can generally be distinguished clinically from the true reaction. It appears earlier, is less sharply circumscribed, and usually disappears in from three to four days. It is characterized by a central area of redness of varying size, surrounded by a secondary areola. On fading it leaves only a faintly pigmented area, which soon becomes invisible. As already stated, it will be safer, however, for those insufficiently experienced to regard pseudoreactions as true reactions.

The outfit for the Schick test consists of a capillary tube and a small rubber bulb, such as are employed in the distribution of vaccine virus, and a bottle containing 10 c.c. of sterile physiologic saline solution (with 0.025 per cent. phenol). The capillary tube contains 2 minimum lethal doses for the guinea-pig of undiluted diphtheria toxin. This toxin should not be a freshly prepared lot, but ripened for at least a year. The capillary glass tubes are filled by means of a 0.25 c.c. record syringe and a fine needle, two minimum lethal doses of toxin being carefully measured into each tube. The ends of the capillary tubes are then sealed in the flame.

DIRECTIONS FOR USE

Break off one end of the capillary tube, and push the broken end carefully through the neck of the rubber bulb until it punctures the diaphragm within, and enters the cavity of the bulb; then break off the other end of the tube. Hold the bulb between thumb and middle finger, place the index finger over the opening in the larger end of the bulb and expel the toxin into the saline. Rinse out the capillary tube by drawing up saline several times, then cork the bottle and shake the diluted toxin. Inject exactly 0.1 c.c., representing

* From the Research Laboratory of the New York City Department of Health.

1. Park, W. H.; Zingher, Abraham, and Serota, Harry M.: The Schick Reaction and Its Practical Applications, Arch. Pediat., 1914, xxxi, 481. Park, W. H., and Zingher, Abraham: Practical Applications Obtained from the Schick Reaction, Proc. New York Path. Soc., October, 1914. Park, W. H.; Zingher, Abraham, and Serota, Harry M.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, THE JOURNAL A. M. A., Sept. 5, 1914, p. 859.

1/50 minimum lethal dose for the guinea-pig, intracutaneously on the flexor surface of the forearm or arm. The contents of the bottle are sufficient for about eighty tests. On account of the fairly rapid deterioration, it is not advisable to use the diluted toxin after twelve hours. The outfit must be kept in the icebox to prevent deterioration.

A 1 c.c. record tuberculin syringe and a fine platinum-iridium needle (No. 22, Burroughs Wellcome & Co.), or steel needle (No. 3, B. W. & Co.) are preferred. An ordinary hypodermic syringe, unless graduated to 0.1 c.c., is not satisfactory.

3915 Broadway.

ACUTE YELLOW ATROPHY OF THE LIVER IN A CHILD OF FOUR

WILLIAM H. MAYER, M.D., PITTSBURGH

History.—Katherine S., a well-nourished white child, aged 4 years and 2 months, weighing 38 pounds, had the following family history.

Her father, aged 37, and mother, aged 34, one brother, aged 10 and one sister aged 7 are living and healthy. Two brothers died in the first year of life from unknown causes. The paternal grandfather and greatgrandfather died from gastric carcinoma. The patient was a full-term child, weighing 9 pounds at birth. Except for a slight gastro-enteritis at the age of 3 years, there has been no illness.

Present Illness.—Jan. 22, 1915, the child was brought to me by her father, who stated that he had noticed a yellowness of the conjunctiva for several days. There were no other symptoms, the appetite was excellent, the child had been in good spirits and had had no signs of gastric disturbance. When questioned, the father stated that she had consumed a considerable quantity of chocolate candy recently.

Physical Examination.—The child was well nourished, robust and apparently 5 years of age. The conjunctiva and the skin showed a faint icterus. The tongue was coated and the breath fetid. The heart and lungs were negative; the hepatic margin was not palpable. Temperature, 98.2; pulse, 78; respiration, 22.

The urine was straw colored with acid reaction. Specific gravity, 1.014. There was a faint trace of albumin. Test for sugar was negative, for bile and indican positive. Microscopic examination showed no casts, no crystals and few epithelial cells.

Even in the absence of the typical gastric symptoms a diagnosis of catarrhal jaundice was made, and the routine treatment instituted with the addition of moderate alkalines. The customary dietary restrictions were made.

Treatment.—When the patient was first seen, the treatment was the following: According to time-honored custom a course of calomel, followed by a saline purgative, was given, and sodium bicarbonate, 6 grains, three times a day. In addition, sodium bicarbonate was added to the drinking water to render it alkaline. A daily dosage of sodium phosphate sufficient to produce at least two bowel movements was ordered. This treatment was continued until the acute symptoms developed. The diet was restricted to skimmed milk, and made low in carbohydrates, the proteins being increased. The very mild symptoms in the first stage did not necessitate any of the more radical measures suggested for their relief.

In the acute stage all the supportive measures were brought into play, but of course gained nothing. Hypodermoclysis and enteroclysis were used.

One week later the icterus remained and the child had suffered no further symptoms. The stools were typical, and the treatment was ordered continued.

Until February 11, there was no change in the condition, the appetite was good and the bowels responded well to purgation; the stools were, however, the same. On this day, the child was restless and vomited several times. On the next day the symptoms were the same and on February 12 the child was delirious at times.

Physical examination, February 12, revealed the icterus markedly deepened. The pupils were widely dilated and the patient was very irritable. The hepatic margin was now palpable three finger breadths below the costal margin. Temperature, 98; pulse, 100; respiration, 26. The urine was brown with acid reaction. Specific gravity, 1.032. There was a marked cloud of albumin. Test for sugar was negative; for bile, positive. Microscopic examination revealed few hyaline and blood casts and red blood cells. Crystals of leucin and tyrosin were present in abundance. Sarcolactic acid was not found.

Toward midnight the patient grew very restlesss and complained of severe abdominal pain, the pulse rate grew more rapid and the temperature was subnormal. The hepatic margin was four finger breadths below the costal margin, and tenderness was elicited on slight pressure. The abdomen was markedly distended.

At 3 a. m., February 13, delirium was noted, and this grew rapidly in intensity until it was maniacal. At 8 a. m. the patient grew comatose.

Vomiting of a "coffee ground" material began at this time, and later, free blood. This continued until death. Examination showed the hepatic margin to be receding, and at 6 p. m. it was no longer palpable. The pupils remained widely dilated, the pulse rate increased and the temperature was subnormal until several hours before death, when it rose to 103 F. (agonal rise). In attempting to cause a cessation of hematemesis a foreign serum was suggested, but before it could be procured and administered the patient died.

Necropsy.—Only a partial necropsy was permitted, and this was done by Dr. E. C. Ritchey and myself. The findings were as follows:

On opening the abdomen small hemorrhagic areas were noted everywhere. The parietal, visceral and peritoneum showed petechiae. Along the mesenteric border were several large hemorrhages. The intestinal contents were black and the mucosa showed petechiae. There were no abnormalities of the appendix. The liver was not appreciably decreased in size from the normal (weight not determined). The surface was a light red, and several large areas of hemorrhage were present under the capsule. The gallbladder was collapsed and the gallduct patent. On section the tissue was friable and the surface yellowish, with a number of areas of small punctate hemorrhages. The kidneys were enlarged and presented the characteristics of an acute nephritis.

The microscopic examination (by Drs. H. H. Permar and W. W. G. Maclachlan) revealed the condition to be acute yellow atrophy of the liver.

Rolleston reported twenty-two cases of this disease in children under 10 years of age. This case, however, is unusual on account of the extreme rapidity after the first acute symptoms, death occurring in thirty-six hours. This will also explain the findings of the pathologists, who report that the degeneration was only partial in certain areas. The urinary findings early in the disease were not unusual, and except for the entire absence of gastro-intestinal symptoms there was nothing to alter a diagnosis of catarrhal jaundice. In the last twenty-four hours, however, the diagnosis was evident.

212 Charles Street.

The County as the Unit in the Tuberculosis Campaign.—George J. Nelbach of the New York State Charities Aid Association says that the tuberculosis problem is one largely for local authority and that the county as a political unit has great responsibility in the antituberculosis movement. On account of the immensity of the problem and the great expense connected with it the county is the most practical unit to deal with it, and as already provided for in some states, the county should not only establish an institution for the care and treatment of tuberculosis, but such hospitals should be the center of the organized movement against the disease in the community. It should assume complete responsibility for the discovery and diagnosis of cases and for their care, for the friendly oversight of discharged cases, for the sanitary and medical supervision of patients in their homes, and for a continuous campaign of health education.

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 251)

XXIX

ASTRINGENTS

Astringents precipitate proteins and cause shrinking of mucous membranes. When applied to inflamed surfaces they cause diminished permeability of the smaller superficial vessels and allay pain due to sensory irritation. They lessen the secretory activity of the gastro-intestinal and other mucous glands, this action being of some importance when the astringents are used in the treatment of diarrhea.

The vegetable astringents act mainly by means of tannins, a group of ill-defined substances characterized by an astringent action and the property of forming black precipitates with ferric salts.

The official tannic acid is soluble in the gastric juice, and in solution combines with the proteins present in the stomach or attacks the gastric mucous membrane. The tannin of gambir (gambir replaces catechu of the Pharmacopeia of 1890), however, is protected by the presence of gum and extractives. When gambir is administered it passes into the intestine, on which it exerts its astringent action, lessens the intestinal secretion and modifies the conditions under which bacteria develop during the inflammation of the mucous membrane.

Certain of the metallic albuminates, such as that of mercury, are soluble in the tissue fluids and by means of its corrosive action the metal destroys cells with which it comes in contact, this action being especially pronounced with mercuric chlorid and zinc chlorid. Albuminate of lead is insoluble in the tissue fluids and when the lead salts are applied in suitable concentration they form an impervious protective coating to the inflamed surface.

The actions of astringents, irritants and caustics differ largely in degree, many of the caustics being astringent when applied in sufficiently dilute solution, and the astringents causing irritation when they are used in too great concentration.

THERAPEUTIC USES

Tannin as such, or in one of the preparations of gambir (catechu), kino or krameria, is sometimes used internally in the treatment of diarrhea; but owing to its tendency to cause nausea and vomiting, especially when given in too great concentration, one of the combinations of tannin with protein, such as tannalbin, is commonly preferred.

Tannin is used in the form of a gargle or troches in relaxed conditions of sore throat. A solution is sometimes used to harden the skin over bony protuberances to prevent bed-sores.

Tannin is sometimes used in the form of an ointment (20 per cent.) or of suppositories, each containing 0.3 gm. (5 grains) for the relief of painful bleeding internal piles, and for prolapse of the rectum. It is irrational to employ opium locally in this way, despite the fact that the well-known galls and opium ointment does afford relief, since the ointment of tannin alone is equally efficacious.

Tannin is frequently directed to be used as a precipitant in poisoning with alkaloids, but the official tannin is not usually readily available in the household and tannin-bearing household articles, such as tea and coffee, are not dependable for this purpose.

Tannin is widely distributed in the vegetable kingdom and many pharmaceutic preparations of vegetable drugs have a wide range of incompatibilities. It is therefore better to avoid prescribing ferric salts and alkaloids especially with such preparations.

The systemic actions of iron, lead and other metals have been discussed, but their uses as astringents and styptics remain to be considered, lead being employed therapeutically only for its astringent action.

Lead acetate is sometimes used with opium in the treatment of diarrhea, but its use should not be long continued lest chronic poisoning be induced. A dilute solution of lead subacetate is used in inflammations and for sprains and bruises, but it should not be applied to the broken skin.

The well-known lead and opium wash is popular as a local application, but the alkaloids of opium are not absorbed to any appreciable extent under these conditions and they have no local analgesic action. A compress wet with lead water will probably answer any purpose that the lead and opium wash serves, and it is more cleanly.

Alum is seldom used internally, though a solution containing from 1 to 5 per cent. is sometimes used as a gargle, but the teeth should be protected against its injurious action. Exsiccated alum is actively astringent and even caustic; it is applied to cankers in the mouth and to chronic ulcers.

Aluminum acetate solution is widely used as an astringent application to infected wounds.

The irritant action of copper sulphate and zinc sulphate explains the use of those salts as emetics. Dilute solutions of zinc acetate and sulphate are used as astringent applications in the urethra, in the eye and in the vagina.

The chlorid of zinc is corrosive; the oxid and stearate are mild astringents and are used as dusting powders on ulcers and inflamed surfaces of the skin.

The tincture of ferric chlorid is commonly used in gargles for sore throat, especially in combination with potassium chlorate. It has been suggested that the alcohol in the tincture be evaporated and replaced with water, the resultant mixture to be used on tampons for checking uterine hemorrhage. The tincture of ferric chlorid or the solution of the subsulphate is sometimes added to glycerin and painted on the throat.

A hot saturated solution of potassium chlorate has often been used as a gargle and mouth wash. Tincture of myrrh is sometimes added to mouth washes and gargles.

In recent years potassium chlorate has been used as the active constituent of tooth pastes and powders. The assumption is that in contact with putrefying organic matter the salt liberates nascent oxygen and thus acts as an antiseptic as well as an astringent. This theory is highly improbable.

Bismuth subcarbonate, subgallate and subnitrate are commonly discussed among the astringents. Their use, however, in the treatment of diarrhea seems to depend on their capacity for forming a mechanical protective covering for the intestinal mucous mem-

* This is the twenty-ninth of a series of articles on useful drugs — on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form. The book, entitled "Pharmacology of Useful Drugs" will be ready about September 1st.

brane rather than on any slight astringent action that they may exert. Bastedo states that they act in a purely mechanical manner as a protective and demulcent to the mucous membrane of the stomach and intestine.

More than twenty-five years ago Harnack called attention to the neglect of certain well-known drugs by clinicians and attempted to explain the therapeutic actions of lime water in the treatment of diarrhea and as a solvent for diphtheritic false membrane. It is unfortunate that more pharmacologists and clinicians do not devote their energies to the investigation of some of the simple remedies of proved value, but which we understand all too little.

Lime water is useful in the treatment of infantile diarrhea because of its astringent effect, and in some cases, because it neutralizes the acid secretions attending the condition. The insoluble calcium salts formed serve to close the finer openings through which bacteria would penetrate. They lessen excretion in the same way, and further, they form a protective covering for the mucous membrane.

The calcium soaps formed with the higher fatty acids are insoluble and have a caoutchouc-like consistency. It has been suggested that their action on the cell lipoids and intercellular substance is a toughening one. Calcium salts are supposed to lessen the permeability of the smaller blood vessels even in those parts of the body that they reach only through the circulation. This systemic action may be induced and the intestinal catarrh controlled when lime water is taken by the mouth, though this action must be rather slight, for, as already stated, most of the calcium is converted into insoluble salts in the intestine — but not in the acid secretions of diarrhea.

Harnack emphatically praises lime water in the treatment of diphtheritic sore throat, in which it dissolves the mucin in the false membrane, permitting the fibrin to fall apart, after which the lime water acts as an astringent. Lime water is sufficiently alkaline to be irritant to a sore throat.

Ichthyol penetrates the unbroken skin to some extent and constricts the superficial blood vessels, hence it is used to lessen hyperemia in a variety of inflammatory conditions of the skin including erysipelas, and acne vulgaris. Grossly exaggerated therapeutic claims have been made concerning its use in a wide variety of conditions, but it has not gained greatly in favor during the past few years.*

RUBEFACIENTS

Inflammation is a local reaction to irritation that tends to limit the area of injury, to remove the injurious substance and the tissues that may be destroyed, and to repair the damage. There is increased permeability of the smaller vessels with the other well-known symptoms of inflammation including redness, heat, swelling and tenderness or pain.

While inflammation is sometimes a useful process it may be present when it is not useful or it may exceed the limits of usefulness.

Evidence is abundant that inflammation results from the irritation of sensory nerves, but the precise mechanism by which this is brought about is not understood. In therapeutic practice irritants of various types are used to induce different stages of inflammation, most frequently that of redness only, and the agent so used is termed a rubefacient. If a somewhat more intense action is elicited, a blister is formed by the collection of the transudate under the horny layer of the skin. This is termed vesication. Pus formation is rarely induced intentionally at present, but pustulants were formerly used to some extent. Caustics destroy the tissue to which they are applied, hence they are used mainly for the removal of callus and for application to small areas when it is desired to remove exuberant growth.

Rubefacients are applied to the skin for the purpose of causing an increased blood supply to relieve organs in which congestion due to diminished circulation has caused inflammation to reach the stage of pain. Since this is accomplished through causing irritation at the seat of application such agents are called counter-irritants.

Ross, Mackenzie, and more especially Head, have put the use of rubefacients on a rational basis. Ross observed the location of painful cutaneous areas complained of by patients who suffered with visceral disease and he suggested that pain was referred along the distribution of somatic nerves which came off from the same part of the cord as the sensory sympathetic fibers to the organs affected. Head was stimulated (to use his own expression) by Ross' suggestion to make careful observations of the areas of cutaneous tenderness in sixty-two cases of herpes zoster, and was surprised to find that these areas correspond exactly with those with which he was familiar in visceral disease. Head mapped out the cutaneous surface of the body and limbs, dividing it into areas each of which corresponds to the distribution of nerve fibers given off from a segment of the spinal cord.

He suggested that the skin is tender in visceral disease because impulses (not painful) pass up the sensory nerves from the diseased organ and set up a disturbance in the segment of the cord to which they are conducted. When a secondary impulse from the skin is conducted to that disturbed segment of the cord the impulse will be altered and exaggerated, so that a stimulus that would not be painful under ordinary circumstances now becomes so, for example, the application of slight warmth then causes a burning sensation.

When there is congestion of an internal organ the application of a rubefacient or more active irritant to the corresponding area of the skin causes vasodilatation in the viscus with relief of the congestion and the attending pain. We do not know the exact mechanism by which this is accomplished, but we do know that the application of rubefacients does often relieve pain and congestion in internal organs in this way.

Head suggests that the head of a common pin—not the point—be used in eliciting tenderness in the skin, or that this may be done by pinching the skin gently between the thumb and forefinger.

The number of irritants is very large and the choice is often determined by convenience of application, care being taken to limit the action of the more active members of the group when they are used.

Among the rubefacients most commonly used are: Alcohol, ammonia, camphor, chloroform (causes blistering readily), capsicum, iodin, menthol, mustard

* Owing to lack of space the materia medica of this and the following groups is omitted from THE JOURNAL. It will be included when this series is published in book form.

and oil of turpentine. Croton oil is sometimes used as a rubefacient but it tends to produce pustulation. Heat in its various forms is probably the most commonly used of the rubefacients.

The various therapeutic applications of the rubefacients cannot be discussed in this place, but an understanding of the principles involved is necessary for their rational use. Nearly all textbooks of therapeutics and pharmacology give the cutaneous areas corresponding to the internal organs as determined by Head.

VESICANTS

When it is desired to carry irritation to the stage of vesication cantharides or cantharidin is commonly used. The action develops slowly, eight hours being frequently required before vesication is induced. When cantharides is employed for a short time it acts as a rubefacient, but in such cases it has no apparent advantage over the more rapidly acting members of the group, such as mustard.

Cantharidin, the active principle of cantharides, is excreted by the kidneys after its absorption into the circulation and gives rise to irritation of the genitourinary tract—a circumstance that has led to its abuse in some instances.

Cantharides is sometimes added to liniments and to hair tonics, and while it may enhance the rubefacient action of these it probably has no specific action on the scalp or hair follicles, and is therefore probably useless as a hair restorative.

CAUSTICS OR CORROSIVES

Strong acids and alkalies and certain of the metallic salts destroy the tissues and dissolve them. Phenol in concentrated solution precipitates the proteins of cells and destroys them.

Acids, alkalies, phenol and certain other caustics are of some toxicologic interest because of the frequency with which they are swallowed accidentally. In such cases the gastro-intestinal injury may result in shock or in perforation with peritonitis. The corrosive action in the mouth and throat may be followed by cicatricial contraction, and esophageal stricture has frequently resulted from swallowing concentrated alkalies and acids and perhaps from phenol.

The stomach should be washed as promptly as possible after a corrosive has been swallowed, using a large amount of water and the appropriate antagonist in dilute form. Thus, if a mineral acid has been swallowed, a weak alkali such as magnesium oxid, lime water or weak soap solution, should be added to the water used to wash the stomach; if a caustic alkali has been swallowed then a weak acid, such as dilute vinegar, should be administered with the wash water. After the stomach has been washed, demulcents, including butter, cream, milk, white of egg or a bland oil, such as olive oil, should be administered. Bismuth subcarbonate suspended in water affords a useful protective covering for the mouth, throat and mucous membrane of the stomach in such cases.

It is generally held that sodium bicarbonate liberates too much gas to justify its use after a caustic acid has been swallowed, but it is commonly at hand in the household and it should be employed in an emergency if lime water, magnesia or pure castile soap is not available.

Strong nitric or glacial acetic acid is sometimes used for the removal of warts. The surrounding tissue is coated with petrolatum and the acid applied to the wart with a stick or glass rod for a short time.

Corns are commonly treated with salicylic acid dissolved in collodion, which insures the continued caustic action of the acid. The coating is removed after having been applied for about twenty-four hours. The treatment is painful, however.

Lunar caustic, or molded silver nitrate is a convenient caustic for the destruction of exuberant granulating tissue.

Concentrated solutions of silver nitrate, even up to 50 per cent., are used in the treatment of sore throat and tonsillitis. The solution is painted on the throat or swollen tonsils and the throat is immediately gargled with salt solution in order to neutralize the excess of silver nitrate by converting it into the insoluble and harmless silver chlorid. This is said to be especially efficacious in severe forms of tonsillitis. Extreme care must be taken to insure that none of the solution is swallowed and that the excess of the caustic is neutralized immediately with sodium chlorid solution.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ENZYMOL.—An extract prepared from the fresh animal stomach, stated to contain the activated gastric enzyme in association with the soluble constituents with which the pro-enzyme is naturally associated. It is free from alcohol, contains a trace of thymol, and has an acidity due to combined hydrochloric acid equivalent to 0.26 to 0.3 per cent. of actual hydrochloric acid. It is adjusted to a definite proteolytic power by the U. S. P. assay method for pepsin, and contains 25 per cent. of glycerin by weight.

Actions and Uses.—Enzymol is stated to be useful as an application to old sores, ulcers and slow-healing wounds. It is said to correct offensive odors, to exert a solvent action on pus and sloughing and necrotic tissue, and to impart a healing stimulus. It is stated to have been effective in cases which have long remained unhealed and have resisted treatment.

Dosage.—It is made ready for use by the addition of one-half to one or two volumes of water; for the solution of necrotic and carious bone, and in some large abscess cavities, it is advised that the preparation be diluted with two volumes of 0.2 per cent. solution of hydrochloric acid. A small vial, containing diluted hydrochloric acid and a pipette for measuring accompany the package.

Manufactured by Fairchild Bros. and Foster, New York. No. U. S. patent. U. S. trade mark No. 44,769.

Enzymol is a light straw-colored fluid.

The presence of the various groups of proteins is shown by the following reactions: Upon heating to boiling the fluid gives a copious coagulation; the filtrate from this gives a marked precipitate with phosphotungstic acid; the protein derivatives remaining in solution may be determined by silver nitrate and barium oxide according to Hall and by the ester method of Emil Fischer. Alcohol in excess likewise gives a copious precipitate. The proteolytic power when acidified and tested by the method of the U. S. P. for pepsin should be such that 4 Cc. will dissolve 800 Gm. of coagulated egg-albumin in two and one-half hours.

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SATURDAY, JULY 24, 1915

A REVIEW OF THE FOOD AND DRUG SITUATION

Even the casual observer of public sentiment and activities in the United States, during the past decade, cannot have escaped noting the steadily increasing interest on the part of the people at large in the educational work of the American Medical Association and other forces directed against frauds in medicine. The Board of Trustees of the Association has evidently felt, as is indicated in a recent special report,[1] that the time has come to survey the situation and inquire whether the vigorous protests so long made by the Association against the exploitation of both the medical profession and the public by proprietary interests have borne fruits. At junctures such as this, it is sometimes helpful to view the situation with different eyes, to let independent observers present their aspect of the story, and, further, to take account of the work still undone as well as the tasks accomplished. Such an opportunity is offered by the latest report of the Connecticut Agricultural Experiment Station,[2] an institution long identified with the progressive movement for the betterment of the food and drug situation.

Many of the facts presented and the opinions ventured in Street's Connecticut report for 1914 are familiar to the readers of The Journal's Propaganda for Reform. It is gratifying to learn from an independent source, however, that a comparison of the newest analyses of proprietary medicines sold in a definite section of the country, with those made at the time of the passage of the national Food and Drugs Act of 1906, shows a wholesome change in many instances. Habit-forming and other dangerous drugs are far less common in the nostrums than they were ten years ago. Street notes that the average sufferer, unless he is a drug habitué, generally takes alarm at the words "morphin," "opium," "heroin," "cocain" and even "alcohol," and fears to use remedies whose labels bear these words. The manufacturer dare not withhold this information, and in many cases has made substitutions to allay the public distrust. The patient, failing to obtain the customary effect of the active and dangerous drug, discontinues the use of the medicine. As a result, it may be observed that certain of the once most widely advertised nostrums are gradually being withdrawn from public sale.

The situation in Connecticut is revealed by the statement that, out of 130 so-called "patent" or proprietary medicines examined in that state last year, thirty-five might be passed "as possessing some merit." This group includes for the most part toilet preparations sold at a high price. The Journal's experience is in accord with that of Street in showing that it is unsafe to depend on former analyses of many of the secret remedies. The formulas are frequently changed, usually without notice to the public, which continues to purchase the supposedly "old and tried prescriptions."

That over sixty of the analyzed proprietary medicines are found to be out-and-out fakes will, of course, surprise no one who has studied the columns of The Journal in recent years. It may be more unexpected, however, to learn that more than a quarter of the preparations still contain dangerous drugs, most of which do not come within the group which the laws require to be stated on the label. It is a long list, including compounds of mercury, lead, silver, barium, arsenic and bromin, as well as diverse organic poisons.

To any one familiar with the prevailing situation, some of the advertising features are not devoid of elements of humor. Thus, one preparation is recommended for alcoholism, and likewise for the production of cocktails and "excellent highballs" — on one and the same label. The label of a "hair tonic" makes the apparently damaging statement that its use brings "the removal of dandruff, and the vitality and lustre of the hair soon follows." Possibly, Street adds, here the manufacturer's English is more at fault than his preparation! Again, there is among long familiar names a "Prescription for the Skin and Scalp" which "cures" eczema in all forms. It contained chloral hydrate, phenol (carbolic acid) and oil of wintergreen, not one of which is found in the list of sixty-five drugs referred to in the U. S. Dispensatory as useful in the treatment of eczema. Freckle lotions containing over 0.5 per cent. (5.3 parts per thousand) of mercuric chlorid are sold without a poison label.

With respect to the cod liver oil wines, there is an accumulation of evidence that they do not possess the nutrient qualities of the oil itself.[3] Any one using them in place of the oil is likely to be grievously disappointed.

The use of wheat bran and of agar agar in the treatment of certain forms of constipation has given an

1. Special Report on the Work of the Council on Pharmacy and Chemistry, The Journal A. M. A., July 3, 1915, p. 67.

2. Report of the Connecticut Agricultural Experiment Station, New Haven, Conn., Food Products and Drugs, 1914. Copies of this report, by John Phillips Street, from which we quote freely, are distributed free by the station on request.

3. Street, J. P.: The Comparative Nutrient Value of Cod Liver Oil and Cod Liver Oil Cordials, The Journal A. M. A., Feb. 20, 1915, p. 638. Oilless Cod Liver Oil, editorial, Feb. 20, 1915, p. 647.

impetus to the production of preparations in which these are claimed or implied to be incorporated. Even here no dependence can be put on the label. One brand of biscuits clearly designated as Agar Agar Wafers certainly contained less than 1 per cent. of the seaweed carbohydrate. Disguised by a fancy trade name, the latter reaches a price of nearly three dollars per pound in some packages.

In the field of diabetic foods, there is evidence of gradual improvement out of the chaotic condition which was revealed by successive reports from the Connecticut station in previous years. It is stated that, while the present European war will doubtless interfere with the importation of many brands from abroad, the production of good products will be, and apparently is being, stimulated in this country.[4]

Out of twenty-three samples of "malt extract," only two have any claim whatever to the name. The other samples were merely more or less concentrated beers, or diluted extract. A genuine malt extract, as defined by the U. S. Pharmacopeia, should contain all the soluble principles of malt in a permanent form. Street remarks that to confuse the spurious extracts with the genuine U. S. P. extract constitutes a serious abuse.

Although most of our food products are showing improvement in the direction of purity, the end is not yet in sight. Street has tersely interpreted the situation by remarking that we are now in the era of legal food, rather than pure food. This is a step forward, but it throws an added responsibility on the consumer. He must learn to read and understand the label; otherwise the protection given to him under the law confers little benefit. The day may arrive when "legal" and "pure" will be synonymous terms in relation to foods and drugs.

ACID PRODUCTION IN THE LIVER IN NARCOSIS

The changes following prolonged administration of chloroform, namely, multiple hemorrhages, edema, fat infiltration and necrosis of the central portion of the liver lobule, have long been known. Little has been done, however, to determine the factors responsible for these changes. A correct explanation would be important, not only as regards chloroform, but also on account of the fundamental processes involved, which are probably identical in poisonings with salvarsan, arsenic, phosphorus, many narcotics and most bacterial toxins. Recently Graham[1] has brought forward strong evidence that liver necrosis in chloroform poisoning is due to the action of acid, mostly hydrochloric acid. Likewise, bromoform and iodoform, which in their breakdown yield hydrobromic and hydroiodic acids, respectively, are able to produce such necrosis.

The most satisfactory evidence that the liver changes following chloroform narcosis result from acid would be the demonstration of free hydrochloric acid in the liver parenchyma. This is impossible by present methods. By the use of acid indicators, however, reactions were obtained in the center of the liver lobule which could have resulted only in the presence of acid of a considerable concentration. Blue litmus paper, not a delicate indicator, was turned red by application to the cut liver surface. To eliminate the possibility of these results being due to asphyxial acids, the procedures were completed within two minutes after removing the liver from the narcotized animal. Control tissues from normal animals did not give an acid reaction.

By oral and intraperitoneal introduction of hydrochloric acid in dogs (from 10 to 15 c.c. of 0.5 to 1 per cent. solutions) and rabbits (from 1 to 2 c.c. of a 1 per cent. solution by mouth), all of the changes induced by chloroform poisoning resulted. Here, however, the liver necrosis occurred at the periphery of the lobule. This variation from the central necrosis of chloroform poisoning is to be expected, since by the arrangement of the blood supply, the periphery of the lobule is first reached.

If the liver necrosis is chiefly a result of acid, then alkalies given at the same time should modify the degree of necrosis. Sodium carbonate was given intravenously in hypertonic salt solution, and in some instances entirely inhibited the narcosis, while in others it greatly lessened it. The narcotic power of chloroform is probably not concerned with its breakdown into acid, since narcosis is not altered by the presence of alkali.

Other substances yielding in their breakdown acids similar to hydrochloric acid were used, namely, ethyl chlorid, ethyl bromid and ethyl iodid. All produced the characteristic changes following chloroform intoxication, and here also there was evidence that free acid had been liberated in each case. Neutral salts of these different acids were found in the urine. Such a salt could not have been present unless the corresponding acid had existed somewhere in the body.

Other members of the chloroform group have been found to produce this necrosis, and the amount of necrosis is dependent on the theoretical number of hydrochloric acid molecules which may be derived from each member of the group. Tetrachlormethane (CCl_4) gives most marked results, because in its breakdown it probably yields four molecules of hydrochloric acid, while dichlormethane (CH_2Cl_2) has least effect, since it is capable of yielding only two molecules of hydrochloric acid. Chloroform ($CHCl_3$) is intermediate between the two, as it yields three molecules of acid.

4. This does not apply to the Dieto Flour and other Dieto products newly examined and found to be composed, in some instances, of from 50 to 60 per cent. of starch. One would have believed that the day for such "diabetic foods" was past.

1. Graham, E.: Jour. Exper. Med., 1915, xxi, No. 7.

The objection has been raised that these tissue changes are due to the chlorin atoms liberated in the dissociation of chloroform in the body, rather than to hydrochloric acid. Graham has refuted this by deeply narcotizing animals with chloral hydrate. In its breakdown, each molecule of this drug liberates three atoms of chlorin, which is excreted mostly as urochloralic acid in the urine. None of the changes characteristic of chloroform intoxication were present, and the conclusion may be justly drawn that chlorin atoms alone do not produce such changes.

Recently it has been shown that narcosis, regardless of how produced, induces severe tissue asphyxia; that is, the cells lose their power to take up and use oxygen. As a result, lactic and some organic acids are formed. Since acids give rise to asphyxia, and asphyxia in turn results in acid production, it is not reasonable to assume that these changes are entirely due to acid. It is possible that the primary results are asphyxial, the acid effects following later. The location of the necrosis in the central portion of the liver lobule is probably due to the fact that this region is farthest removed from the oxygen supply, and most distant from inhibitory substances carried in by the blood. It is the region where asphyxial changes would be most marked. But since considerable amounts of asphyxial acids are not present until from two to six hours after death, Graham believes that the liberation of hydrochloric or other halogen acids in cases of chloroform or allied narcotic intoxications is the chief factor in producing the changes, and the evidence which he has accumulated certainly points in that direction. Of special interest is the possibility of applying certain fundamental considerations evolved from this work in the treatment of bacterial and other intoxications.

THE HOROWITZ-BEEBE TREATMENT FOR CANCER

Numerous requests for information have been received by THE JOURNAL concerning a new "treatment for inoperable cancer" which, during the last two months, has been widely acclaimed in the lay press and in some medical journals. The first public announcement of this treatment appears to have been published in the New York *Times*, Feb. 19, 1915, and was to the effect that a "new cancer serum" (called by the newspapers "autolysin") had been devised at the General Memorial Hospital in New York City and used with curative effect in hopeless cases in the last stages of the disease. As the General Memorial Hospital is a research institution associated with the Cornell University Medical College, the report received more attention than it might otherwise have achieved. March 6, 1915, a statement, signed "for the Medical Board of the General Memorial Hospital" by James Ewing, W. B. Coley, Richard Weil and S. P. Beebe, appeared in several medical journals. It said:

> While it is impossible to discuss in detail every error in the report, it is possible to deny categorically the chief assertions made in the article.

Among the other statements made in this denial is the following:

> "We know of nothing that seems likely to prove a constitutional remedy for advanced cancer. All we hope to do at the General Memorial Hospital is in the line of painstaking study of different forms of cancer, the persistent application of *well attested* remedies and palliatives in the disease, and the investigation of such other methods as present a *sound theoretical basis* always with strict regard to the *interests* of the individual patient." [Italics ours.—ED.]

Nevertheless, in spite of the statement of this committee, there appeared shortly afterward an article signed by S. P. Beebe,[1] entitled "A Treatment for Inoperable Cancer—A Preliminary Report." The other members of the board of the Memorial Hospital do not appear as co-authors.

As a scientific contribution, this article is a remarkable statement, especially when it is kept in mind that the author was connected as professor of experimental therapeutics with a leading medical school. The author describes the introduction of the system of treatment by "Alexander Horowitz, Ph.D., an Austrian biologist and chemist," and its trial at the General Memorial Hospital. Despite the previous reference to "sound theoretical basis," there is no statement made of preliminary investigations of the action of this therapeutic agent or its multitudinous components on anything except human patients, although coincident experiments with sarcoma rats are mentioned. The composition of the preparation is not disclosed as to quantities, but it is said to be made from the following drugs: *Menyanthes trifoliata, Melilotus officinalis, Mentha crispa, Brassica alba, Anemone hepatica, Viola tricolor,* anthemis, fructus colocynthidis, lignum quassiae, *Urtica dioica,* radix rhei and hedge hyssop. *Menyanthes trifoliata* is a little-used drug called buckbean. *Melilotus officinalis* is the common yellow sweet clover growing in waste places. *Mentha crispa* is a variety of mint which grows in Europe. *Brassica alba* is better known by its common name, white mustard. *Anemone hepatica* is the ordinary spring flower generally called liver leaf. *Viola tricolor* is pansy; it has been tried and discarded repeatedly as a "cure" for cancer. Anthemis is Roman camomile. Fructus colocynthidis and lignum quassiae are terms used for colocynth and quassia, respectively. *Urtica dioica* is common nettle.

The reader may be able to recall some other unused "herbs" that are not mentioned in this list, especially if he attended medical school thirty or forty years ago. As one critic of the matter has said, apparently the only ingredient overlooked in the preparation of the new remedy was a rabbit's foot.

1. Beebe, S. P.: A Treatment for Inoperable Cancer, New York Med. Jour., 1915, ci, 981.

Beebe goes on to state that "a poultice is prepared for application by the usual methods," which are described in brief. Also an extract is prepared for injection, the method not being given "because it is still the subject of experiment," although here we are enlightened by the information that the initial dose of this undefined extract is from 5 to 7 minims. For the most part, the extract is used for direct injection into the tumor, causing an inflammatory reaction which is described in some detail, although it scarcely seems necessary to state that white mustard (*Brassica alba*) will cause an inflammatory reaction, to say nothing of the nettle, the colocynth and the spring hepatica. The statement is also made that subcutaneous injections remote from the tumor cause local reactions in the tumor, but this procedure is apparently not relied on in the cases reported in this article. These cases number sixteen. Three were superficial skin cancers, which are said to have been completely healed under the influence of the poultice, as, of course, they might well have done under any escharotic application, a fact which is admitted. In only one of the cases mentioned in this article, however, are any data whatever given as to the length of time the patients have been under observation — but evidently this is far too brief for any one to draw conclusions as to results. Another group of seven "hopelessly incurable and inoperable" cases is next mentioned. Of these, five patients died under treatment and the other two refused to continue it, although amelioration is said to have occurred in three of the seven. The remaining six cases were treated by Beebe and J. Wallace Beveridge in another hospital by injections of the extract into the tumor tissue, with the production of necrosis and diminution in size of the tumors in some cases, although one of these patients died.

Aside from this very unpromising report, apparently all that has been published in any medical journal are stereotyped excerpts from it which have appeared simultaneously as abstracts in several medical journals. If this were all that had been published, there would probably not be the prevailing excitement over the subject. The greatest marvel, perhaps, was why this report was published at all, dealing as it does with only sixteen cases, under only a short period of observation, with results that are apparently no better than could be secured by applying arsenic paste or injecting a solution of any escharotic substance into the tumors. What is there of scientific interest or therapeutic advance in such a procedure? Why should any person with critical judgment or scientific training of the slightest degree rush into print with a cancer treatment of but a few weeks' or months' trial, and founded on nothing more theoretically sound or inspiring than a Chinese materia medica? Why, too, should the lay press be furnished with literary articles on the subject by some of those engaged in promulgating this treatment, and why should these articles be embellished with exquisite half-tone reproductions of the features of the experimenters?

The status of the Horowitz-Beebe method of treatment of cancer can be estimated by applying an average knowledge of pharmacology, sociology, psychology and, above all, we fear, economics.

THE CORPUS LUTEUM AND SECONDARY SEX CHARACTERS

Each year is bringing new evidence in regard to the importance of the tissue included in the corpus luteum[1] for certain of the animal functions. It undoubtedly contains substances which inhibit ovulation, in illustration of which the novel effect of injection of extracts of desiccated substance of the corpus luteum of the cow on ovulation in fowls has already been described.[2] The assertion has frequently been made that the chief factor in exciting the growth of the mammary glands during pregnancy is some chemical substance — a so-called hormone — reaching the blood stream from an organ associated with the maternal functions. Included in the suggested sources of this stimulating product has been the corpus luteum — the tissue produced in the ovary as the result of the discharge of an ovum. Evidence has been brought forward that the corpus luteum may cause a certain degree of hypertrophy of the mammary glands in the entire absence of any product of conception in the uterus. Such phenomena as the limited growth of the mammary glands which occurs at puberty call for a causal explanation independent of the presence of a fetus in the body. Here the stimulus has been ascribed by some authors to the growth of the tissue of the corpus luteum, resulting from the beginning of the discharges of the ova.

A remarkable instance of the correlation of the corpus luteum with the secondary sex characters has been described by Drs. Pearl and Surface[3] of the Maine Agricultural Experiment Station at Orono. A cow which had produced three calves and given an abundant flow of milk suddenly ceased to produce the secretion from the mammary gland. The udder rapidly shrank to a small size and the animal began to show the external characteristics of a bull. After a lapse of eight months the assumption of the male characters in various regions of the body was complete and perfect. A necropsy showed as the only gross abnormality a simple cystic condition of the ovaries. Histologically and cytologically these organs differed from the normal cow's ovary in only one essential respect, namely, that they had no corpora lutea.

These phenomena remind one of the remarkable reverse transformations of secondary sex characters

1. The Functions of the Corpus Luteum, editorial, THE JOURNAL A. M. A., July 4, 1914, p. 32.
2. The Corpus Luteum and Ovulation, editorial, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2232.
3. Pearl, R., and Surface, F. M.: A Case of Assumption of Male Secondary Sex Characters by a Cow, Science, 1915, xli, 615; Sex Studies, VII, Ann. Rep. Maine Agricultural Experiment Station, 1915.

that have been accomplished by castration and transplantation of ovaries.[4] The seat of the control of the characters in the case here reported is apparently narrowed to the lutear tissue, for the interstitial secreting mechanism of the cow's ovaries was entirely normal in respect both to the number of cells and to the cytologic characteristics of the individual cells. This testimony in the present instance is not the hearsay sort but comes from competent observers in the field of genetics. The germinal mechanism of the transformed animal was perfectly normal up to the point at which ovulation should occur. It then failed to separate the ova from the ovary. Cystic ovaries are not uncommon. No one can read the interesting report of this unusual manifestation without suggestion of what the findings may mean in relation to human experience.

SOME FEATURES OF SURGICAL SHOCK

Surgical shock is a clinical entity: but when one attempts to formulate a definition of what is meant by this expression and to establish the criteria by which it is determined, almost insuperable difficulties at once arise. Few topics in recent experimental medicine have been the subject of more acrimonious debate, not to say misconception. If the nature of shock were merely a theme of academic interest, it might be an attitude of discreet wisdom to avoid discussion of the problem before an audience of practitioners. But the picture of "a state of general apathy, reduced sensibility, extreme motor weakness, great pallor, very rapid small pulse, thready soft arteries, irregular gasping respirations and subnormal temperature" [5] is sufficiently familiar to every one of our readers to justify occasional essays into the questions of dispute. Most of these have at length been worked out by physiologists and pathologists to a point at which they can be considered from the broader standpoint. For the nature of what is represented as shock is evidently not simple or uniform. It may arise in the course of various diseases or of surgical operations, or may result from accidents or intoxications. Indeed, a recent writer has appropriately remarked that the use of the word "shock" is comparable to that of the word "rheumatism." [6] The latter formerly included every disease of the joints, and many other diseases besides, but has gradually been restricted to very narrow limits.

It is essential, in view of what has just been said, that in the future the discussion of the genesis of shock shall be guarded by a more exact definition of the phenomena which are under consideration. Investigations in which the problems of shock are being experimentally unraveled are commonly carried out on anesthetized animals. The results are often strictly comparable to what may be observed in human patients during operation; nevertheless they do not apply to the cases of so-called "pure" shock sometimes encountered under conditions of ordinary life. At times a hysteria or "psychic" shock is meant; again, still other complex agencies seem to be involved; sometimes the word is merely a cloak for ignorance as to a prevailing condition.

Dr. Frank C. Mann[7] of Indiana University has pointed out that it is impossible to reduce an anesthetized animal to a state of shock by any degree of sensory stimulation, provided all hemorrhage is prevented and its abdomen is not opened. He also excludes the probability that acapnia—a greatly diminished content of carbon dioxid in the blood—is a controlling factor in shock, which has been asserted by some experimenters in recent years. Neither is shock due primarily to a disturbance of respiration, although the respiratory center is more quickly injured than any other vital center by shock.

A favorite hypothesis in the past has charged the phenomena of shock to a depression or fatigue of the vasomotor center, leading to the characteristic low arterial blood pressure. The work of Porter and others may be taken as finally dispelling this familiar assumption. Even the cardiac centers which have been supposed to lose their tone may be intact in the deeply shocked individual. With respect to the blood vessels themselves, it is by no means certain that they uniformly lose their muscular tone; at any rate, it appears as if arterial tone is not wholly lost. The venous pressure in shock follows the downward course well recognized in the case of arterial pressure, and recent experiments suggest that the blood becomes stagnated in the dilated veins. The evidence furnished by Morison and Hooker[7] indicates loss of venous tone, which would predicate failure of the venopressor mechanism and a stagnation of venous blood. It is this consequence which earlier led Henderson to maintain that the fatal outcome is due to a failure of the heart to fill in diastole.

Inasmuch as the effect produced by exposure and trauma of the abdominal viscera—the easiest and most certain way of producing surgical shock—is not due alone to a paralysis of the vasomotor mechanism of the splanchnic area, Mann[3] has charged it to the tremendous loss of red cells and fluid from the blood, due to the reaction of the great delicate vascular area to irritation. In the course of operations in which the abdomen has not been opened, the loss of fluid, etc., from the blood is comparatively unimportant. There is no comparable stasis, diapedesis, exudate, endothe-

4. Steinach, E.: Willkürliche Umwandlung von Säugetiermännchen in Tiere mit ausgeprägt weiblichen Geschlechtscharacteren und weiblicher Psyche, Arch. f. d. ges Physiol., 1912, cxliv, 71.

5. Meltzer, S. J.: The Nature of Shock, Arch. Int. Med., July, 1908, p. 571.

6. Mann, F. C.: The Peripheral Origin of Surgical Shock, Bull. Johns Hopkins Hosp., 1914, xxv, 205.

7. Morison, R. A., and Hooker, D. R.: The Vascular Tone and the Distribution of the Blood in Surgical Shock, Am. Jour. Physiol., 1915, xxxvii, 86.

lial change or similar involvement of local inflammatory nature. Contributory factors which help to produce the condition of shock need not be overlooked. Muscular relaxation, decreased intra-abdominal pressure and impaired respiration all help to decrease the amount of blood returned to the heart. Hemorrhage greatly facilitates the incidence of shock. The degenerative changes described in the cells of the nervous system are without doubt the result and not the cause of shock.

The use of the word "shock" should be avoided, Mann[6] writes, and instead an accurate and detailed description of the patient's condition should be given. He suggests that, if the term be used at all, it should be applied to the condition in which, without any grossly discernible hemorrhage having occurred, the amount of circulatory fluid is greatly diminished on account of stagnation of the blood in the smaller veins and capillaries, or by exudation from these of the fluid and cellular elements of the blood.

SERUM SICKNESS AND ITS PREVENTION

Soon after the introduction of diphtheria antitoxin, and before its value in the treatment of diphtheria and for prophylactic purposes had been generally recognized, reports appeared regarding certain disagreeable clinical manifestations occurring several days after administration of the serum. The death of an individual following the use of antitoxin was reported, which, with the clinical reports, tended for a time to restrict the use of this new therapeutic agent. Careful observations by clinicians and biologists, however, soon allayed the fears of those who were inclined to attribute the ill effects to the antitoxin; they showed that the antibodies had no part in the reactions, that they were due to some property in the serum itself, and that this property existed in the serums of all animals independent of antitoxic properties.

The symptoms of the ordinary form of what is now known as the "serum disease" or "serum sickness" are familiar to all who have had occasion to administer therapeutic serums. The various clinical manifestations of the serum disease are shown by the presence of one or more or all of the following symptoms: eruptions of different types, fever, edema, and pain in the joints, occurring some time after the injection of serum. The severity of the symptoms within certain limits is, as a rule, proportionate to the amount of serum administered, although it has been shown that the serum of certain horses is more apt to cause serum sickness than the serum of others.

The work of von Pirquet and Schick, Rosenau and Anderson, Otto, Besredka, Weaver and others has shown that the disease is a true anaphylactic phenomenon, although certain writers have been inclined to attribute the severe cases and occasional instances of death following the parenteral administration of serum to anaphylaxis and to consider serum sickness as a different condition. It would seem that the two reactions are the same, and are true anaphylactic phenomena.

The greater number of severe cases of serum sickness, and practically all of the few fatal cases, have been in persons who have had but a single injection. In some way the individual has become exquisitely sensitized to horse serum, so much so that many of these persons are subject to hay-fever-like or asthmatic attacks when in the vicinity of horses or stables.

One of the first to report such cases was Gillette,[1] and it has since become established that the administration of serum to such individuals and to asthmatics may result in serious symptoms or even death. In the ordinary form of serum sickness, the symptoms develop, as a rule, from the eighth to the twelfth day, unless the person has received an injection of serum from two weeks to less than a year previously, in which case symptoms develop in twenty-four to forty-eight hours. This is known as the "immediate reaction." If the first injection had been given twelve months or more previously, the reaction is delayed from four to seven days; this is known as the "accelerated reaction." These reactions following second injections, while unpleasant and at times disquieting, are seldom alarming in character.

Much research has been devoted toward devising methods by which the primarily sensitive individual may be detected and to prevent attacks of serum disease following the second injection of serum in persons not primarily sensitive. The skin reaction for the diagnosis of serum hypersusceptibility in man was first employed by Moss,[2] and is of value but does not detect all susceptibles. The attempts to prevent the ordinary form of serum disease have not produced satisfactory results. Among the measures which have been suggested are the preliminary injection of a small amount (0.5 c.c.) of serum, followed several hours later by the full dose, the idea being that the preliminary injection would induce antianaphylaxis. Based on experiments, principally on guinea-pigs, the use of atropin sulphate has been suggested as a method of combating the constriction of the smooth muscle fibers of the bronchioles; but it must be admitted that none of the different procedures is wholly satisfactory. Except in asthmatics and those known to have a hypersensitiveness to serum, the great benefits to be derived from diphtheria antitoxin so far outweigh the discomforts of an attack of the ordinary form of "serum sickness" that physicians should have no hesitancy in the prompt and free use of antitoxin.

1. Gillette, Herbert F.: Diphtheria Antitoxin in Bronchial Asthma, THE JOURNAL A. M. A., Jan. 4, 1908, p. 40.
2. Moss, W. L.: A Cutaneous Anaphylactic Reaction as a Contraindication to the Administration of Antitoxin, THE JOURNAL A. M. A., Aug. 27, 1910, p. 776.

The routine use of the Schick test for immunity to diphtheria reduces the number of those requiring the prophylactic use of diphtheria antitoxin, and it should be applied to all "contacts."

THE MEDICAL RESERVE CORPS INSTRUCTION CAMPS

Since the Medical Reserve Corps of the Army was established in 1908, the government has done little until this season to instruct the officers in their duties. Practically no action has been taken by the officers of the corps to learn their duties, except in the three organizations which have been formed in New York, Chicago and St. Louis. These bodies have arranged for lectures at rare intervals by officers of the Army Medical Corps; further, individual members of the corps who have taken unusual interest in the work have endeavored at times to obtain the desired knowledge from medical officers or at military posts. Although all the members of the corps are furnished by the War Department with certain standard books, only an exceedingly small percentage of the corps have profited by this attempt of the government to furnish technical information as to their duties.

In consequence of the apparent lack of interest on the part of the corps and the lack of definite policy of the government, the organization has accomplished practically nothing; and lack of progress always means retrogression.

This year summer camps of instruction were established in several places. While the attendance at these camps has not been large, they are undoubtedly a step in the right direction; they are evidence that the government appreciates the necessity of giving to reserve medical officers technical instruction in their duties and that the officers themselves welcome the long-deferred instruction. Realizing that much could not be expected from nonmilitary medical men who wished to become soldiers, the instructors did not attempt to feed them with higher tactics, but began with the simpler litter drill, and similar elementary work.

The work of these camps of instruction, while relatively elementary, is as necessary to the medico-military neophyte as is the study of anatomy to the medical student or the "three R's" to the school child. It is hoped that the handicap which existed this year will be removed before next summer, and that the officers of the Medical Reserve Corps, who wish to learn more of the duties pertaining to their position, may not be obliged to furnish their own transportation and subsistence, but may be placed for purposes of training on the active list of the Medical Reserve Corps and thereby be entitled to transportation and the pay of their grade. If opportunity should be given to all officers of the corps to come under instruction next summer, the additional expense to the government would be repaid many times by the enthusiastic cooperation of the officers who take the course, and by their increase in efficiency.

The interest manifested by the officers who took the course of instruction this summer, the eagerness with which they absorbed information, the desire shown by many to return for subsequent courses, all indicate that the Medical Reserve Corps of the Army, inactive list, takes its position seriously and believes that it is its patriotic duty to become efficient, so that in time of its country's need it will not be found wanting.

Current Comment

PUBLIC HEALTH LEGISLATION IN ILLINOIS

For many years Illinois has been a dark spot on the public health map. Originally a leader in sanitary legislation, in the times of Rauch a pioneer in many lines of health work, Illinois seemed to have settled down into a condition of chronic inertia from which it was impossible to expect any advance. Opinions will probably differ widely as to the reasons for such a situation. Fortunately for the people of the state, however, a new era seems to have dawned. The recent session of the Illinois legislature, however barren it may have been in other directions, was certainly productive of needed public health measures. In no other state this year was so much important public health legislation enacted. Many measures long desired and earnestly worked for, but which have failed in former sessions, have been enacted into law, notably a comprehensive and very excellent vital statistics law, based on the model law drafted by the committee of the American Medical Association and recommended by the U. S. Bureau of the Census; a tuberculin test law; a school sanitation law; a law for the prevention of blindness from ophthalmia neonatorum; a strong antinarcotic law; a law providing for the confinement of dangerous feebleminded persons; a law restoring power to the State Board of Health to revoke licenses issued prior to 1899; a law for the establishment of tuberculosis sanatoriums by counties; a revised occupational disease law, and several others of minor importance. To any one who has followed the efforts to secure better conditions in Illinois during the last twenty years, it is unnecessary to do more than present this list of achievements. Illinois is today the only state of the first rank that is without a modern system of birth and death registration. The passage of the model bill insures Illinois admission into the registration area of the United States Census. The passage of the amendment to the medical practice act gives the state board of health jurisdiction over all licenses issued by the board under previous laws; this power has been lacking since the decision of the state supreme court in the case of the *State* v. *Reed* in 1901. In addition, the legislature appropriated funds sufficient to enable

the board to reorganize the medical field service, to district the state, to man it with district health officers with an epidemiologist in charge; to establish a well-equipped sanitary engineering bureau, with a state sanitary engineer in charge; to enlarge the diagnostic laboratories, providing one in each extremity of the state; to improve and extend the free distribution service with respect to antitoxins, vaccines, etc., adding smallpox vaccine to the list of serums and vaccines now furnished; to organize a vital statistics service which will be efficient and up to date, and to improve the office service. This record, almost if not quite unparalleled in the enactment of constructive legislation, is one of which the State Board of Health and its secretary may well be proud. Illinois is to be congratulated on her progress, which all friends of public health will hope is only a promise of better things in the future.

BUTTERMILK AND BACTERIA

The popularity of buttermilk as a food and a beverage is attested by its widespread sale. Any drink which can succeed in invading the precincts of the saloon and compete for sale, as buttermilk now does, side by side with alcoholic beverages deserves attention. The plan of allowing milk to undergo fermentation of such a character that the products are not unpleasant or unwholesome for human consumption, yet serve as preservatives to prevent undesirable types of decomposition, is not new. The fermentation product chiefly depended on in such cases is lactic acid, although, in certain types, alcoholic fermentation may also be in evidence. Buttermilk belongs to the acid type; it usually contains from 0.6 to 0.9 per cent. of acid. Strictly speaking, buttermilk is a by-product of butter-making; but with the development of the milk industries, the demand for buttermilk has frequently been met by fermenting the skim or separator milk which remains as a by-product of the cream trade. The fermented product is not literally buttermilk, but it may be indistinguishable from the latter in composition and properties. The use of these fermented milk products has been favored, not alone for their intrinsic food value, but also for accessory reasons. The specific fermentation products have been reputed to have a "tonic" action in the digestive tract. Special virtues have been attributed to the lactic acid bacteria, particularly in relation to putrefactive changes in the alimentary tract. Aside from any alleged therapeutic virtues, there can be no doubt of the nutrient value of the beverages. With the growing attention devoted to the bacteria which milk may harbor, and the recognition of the dangers which they may entail, it is not strange that buttermilk also should demand bacteriologic consideration. Heinemann,[1] of the Department of Bacteriology and Hygiene at the University of Chicago, has demonstrated that, although some acid-tolerant cells of *Bacillus coli* survived the presence of 0.6 per cent. of lactic acid in milk, *B. dysenteriae, B. typhosus, B. diphtheriae, B. paratyphosus* and *Spirillus cholerae* were destroyed by the presence of 0.45 per cent. of lactic acid. It is now realized that some strains of these micro-organisms can resist even greater amounts of acid. Whether or not the presence of saprophytic bacteria in buttermilk may have some influence, favorable or otherwise, on pathogenic bacteria remains to be decided. The smaller the initial amount of lactic acid, the more likely is the growth of acid-tolerant strains. Consequently the slower milk sours, the greater is the danger of pathogenic bacteria surviving. Acids other than lactic acid are frequently present in buttermilk. This beverage, Heinemann reminds us, should therefore be looked on with suspicion, especially if heavily polluted, unless it has been prepared from pasteurized milk. There is, however, a remnant of satisfaction to all lovers of the fermented product to learn that the chances of buttermilk becoming a carrier of infection are small.

1. Heinemann, P. G.: The Germicidal Effect of Lactic Acid in Milk, Jour. Infect. Dis., 1915, xvi, 479.

SAFE ICE CREAM

With the coming of summer there is, naturally, a largely increased consumption of iced products. Conspicuous among these is that ever delightful commodity, ice cream. Unfortunately, however, there are as many formulas for the preparation of this delicious and highly edible substance as there are manufacturers who make it. A note in the current issue of the *Bulletin* of the North Dakota Agricultural Experiment Station calls attention to a few of the modifications extant in that state:

> Ice creams in this state are supposed to contain 14 per cent. of butter-fat. This corresponds with the standard in a majority of other states. There are those, however, who furnish a product containing from 6 to 10 per cent. of butter-fat, using a thickener, gelatin, gum, rennet, etc., for the purpose of giving the cream the appearance of richness. This is a fraud and works a hardship upon the man who is endeavoring to produce a good article. On the other hand, there are those who do not take sufficient interest to know what they are doing or are not posted as to the fat content which they use and so are giving to the public ice cream containing from 18 to 22 per cent. of butter-fat. Such ice cream is too rich and is not as satisfactory as that containing approximately 14 per cent.
>
> If fruit is used, then the per cent. of butter-fat is slightly reduced to 12 per cent.
>
> Pure ice cream should contain no gelatin, but if gelatin is used then the product must be labeled, sold or dispensed as gelatin ice cream.
>
> A great deal is said about the necessity for gelatin. The writer has not been able to follow all of the arguments in favor of gelatin, but in a number of instances is convinced that the use of gelatin is for the purpose of selling more air at ice cream prices. Ice cream is sold by the measure and if you can work in enough air so as to convert one gallon of ice cream into two gallons, there is a big profit, and that is one of the reasons for using gelatin.

The question of the preparation of a satisfactory ice cream involves the consideration of numerous factors, including not only the type of milk or cream which forms the basis, but also the use of thickeners and the various methods of preparation. The possible entrance of numerous bacteria must be considered. Physicians should interest themselves, and make sure that the material offered for their own consumption, and for that of their patients, is in accord with the highest standard set for such products.

THE RATE OF ABSORPTION OF ALCOHOL

The nature of the tolerance acquired toward such substances as tobacco, opium and alcohol will not be clearly understood until the physiologic behavior of the active compounds present in these typical habit-forming products is more precisely known. Inasmuch as alcohol is perhaps the most widely used of all substances toward which a considerable degree of tolerance seems to be established, its performances in the living organism deserve careful consideration. The conditions under which it gains entrance into the circulation, the concentration in which it travels through the body and appears in the circulating fluids, and the speed with which it is oxidized or excreted, as the case may be, deserve investigation. A chapter in this story has been written by Völtz and Dietrich[1] of the Institute for Fermentation Industries at Berlin. They have found that the rate of absorption of alcohol is noticeably higher in animals that have been accustomed to alcohol than in those which have never received any. The differences between the two groups are not inconsiderable. At the end of an hour after the intake, they may be represented by such figures as 66 and 87 per cent., respectively. The speed of oxidation, that is, of disappearance of alcohol in the metabolism, is also somewhat greater in the individuals accustomed to that substance. In this respect, however, the differences are by no means so conspicuous as in relation to the comparative rates of absorption.

ECHINACEA

Among the plant products which the Council on Pharmacy and Chemistry has in recent years declared to be without therapeutic merit is the root of *Brauneria angustifolia*, more commonly designated as Echinacea, and popularly known as the coneflower or black sampson.[2] Preparations of the root, usually the fluidextracts, have been recommended with a variety of claims of familiar sound: antiseptic, aphrodisiac, febrifuge, analgesic, alterative. It is stated on good authority that there is a sufficient demand in the pharmaceutic market to warrant active trading in the plant among agriculturists in the Middle West. In view of this fact, it is interesting to learn the outcome of an investigation of the chemical properties and possible therapeutic potency of Echinacea in the laboratories of a pharmaceutical manufacturer.[3] Since no one would bring an accusation of unfavorable bias under such circumstances, we are glad to quote the results verbatim. "No physiologically active substance was isolated, and the results may, therefore, be considered as partially confirmatory of the report of the Council." Authoritative evidence for the value of Echinacea, so far as we can learn, is yet to be presented.

1. Völtz, W., and Dietrich, W.: Ueber die Geschwindigkeit der Alkoholresorption und -Oxydation durch den an Alkohol gewöhnten, bzw. durch den nicht daran gewöhnten tierischen Organismus; Die Beteiligung des Alkohols am Gesamtstoffwechsel, Biochem. Ztschr., 1915, lxviii, 118.

2. Echinacea Considered Valueless, Pharmacology, THE JOURNAL A. M. A., Nov. 27, 1909, p. 1836.

3. Heyl, F. W., and Hart, M. C.: Some Constituents of the Root of Brauneria Angustifolia, Jour. Am. Chem. Soc., 1915, xxxvii, 1769.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Personal.—Dr. Augustus W. Chandler, formerly of Dixon, now in charge of the Lincoln Hospital, Rochelle, fractured three ribs in the overturning of an automobile, July 5.——Dr. Chester H. Latham, Pecatonica, is reported to be critically ill with nephritis in St. Anthony's Hospital, Rockford.——Dr. Arthur J. Dalton, St. Joseph, has returned home after an absence of two months during which he was recuperating after an operation for appendicitis.

Cause of Typhoid Epidemic Found.—The superintendent of health of Oak Park, after a persistent investigation as to the cause of typhoid fever which has been epidemic in that suburb of Chicago, announces that he has found the typhoid carrier in the person of Mrs. Mary Burke, who for three years has been at work in the lunch room of the Oak Park High School in which so many cases of the disease occurred. She is now detained under police surveillance in the Oak Park Hospital.

Relief Work in Belgium.—The lecture room of the Evanston Women's Club was crowded, July 8, when Dr. Caroline Hedger, Chicago, gave a talk on the relief work in Belgium. During her stay of six months in Belgium, Dr. Hedger was a member of a commission to find work and shelter for the homeless Belgians, made several thousand inoculations of antityphoid serum and worked in a large soup kitchen. The points which most impressed Dr. Hedger were the deep gratitude of the Belgians toward the American people and the doctrine of hate which she believes may not be eradicated for decades or perhaps for generations.

Wants Equal Standards.—The committee on medical education of the Illinois Medical Society in its last report calls attention "to the inequitable provision in the Illinois statutes which exacts certain requirements of preliminary education and prescribed medical courses of applicants for medical licensure, while practitioners of other systems of healing and midwives are required only to pass an examination without preliminary educational requirements. It certainly looks like class legislation and legislation which does not conserve the health and lives of the people. If the state board has power under the present practice act, and we think that it has such power, to exact similar educational requirements of other practitioners and midwives, we hereby recommend that this be done, to the end that all licensures shall be placed on an equitable footing."

Chicago

Personal.—Dr. Charles F. Sanborn has been appointed superintendent of the new Green Point Hospital, Brooklyn, under the department of charities of New York City.——Dr. Hugo V. Pribyl, who was bitten by a rabid cat, recently, is taking the Pasteur treatment.

Protecting Foods.—The city council has passed an ordinance requiring the covering of foods on sale in grocery stores, fruit stores, stands, windows, sidewalks, on push carts or peddlers' wagons. They must be covered by a complete and impervious covering, except in the case of fruits, bakery and other goods subject to sweating. Ventilation may be allowed by a 20-mesh-gauze screen not to exceed 10 per cent. of the sides of the case in which they are contained. All foods kept for sale outside of buildings or in a part of a store, restaurant or lunch room to which the public have access, shall be kept at least 18 inches from the floor, unless such food is in tight containers, or in containers the openings of which are at least 18 inches above the level of the floor or sidewalk. The ordinance does not affect the necessary exposure of food while in process of handling or serving out.

INDIANA

Individual Drinking Cups.—The State Board of Health has requested that all street venders must have individual drinking cups and serving cups for beverages. Hereafter circus and other kinds of lemonade will have to be served in individual cups of paper or other material.

Free Lunches Abolished.—According to a late ruling of the State Board of Health, all free lunches in Indiana have been abolished unless they meet the requirements of the board, which are most rigid in regard to sanitation. This does not necessarily abolish the free lunch but requires every saloonkeeper to make it sanitary.

Personal.—Capt. Frank W. Foxworthy, M. C., Ind. N. G., Indianapolis, has passed his examination for promotion and has been commissioned Major M. C. and put in command of the Field Hospital, No. 1, Indianapolis.——The Field Hospital and Ambulance Company will attend the maneuver camp at Sparta, Wis., from July 21 to 31.——Dr. Simon Reisler and Dr. Harold W. Nimal, Indianapolis, have passed the examination for first lieutenant, Medical Corps, Indiana National Guard.——Dr. Robert L. Nattkemper of Terre Haute, a graduate of the Indiana State University, 1912, has been appointed a Junior Lieutenant in the Medical Department of the United States Navy and assigned to the recruiting service in Milwaukee.

IOWA

Pathologic Laboratory for Waterloo.—The Waterloo Medical Society has provided a fully equipped laboratory for bacteriologic and pathologic work for the use of physicians of Waterloo and the vicinity. A committee appointed by the society has purchased an equipment costing more than $5,000 for this laboratory.

State Board Election.—At the annual meeting of the State Board of Health in Marshalltown, July 5 to 8, Dr. Walter L. Bierring, Des Moines, was reelected president; Dr. John L. Tamisiea, Missouri Valley, vice president, and Dr. Guilford H. Sumner, Des Moines, was reappointed secretary for a second term of six years.

New Hospital Assured.—The canvas for the subscription to ensure the building of the new hospital at Centerville to cost $60,000 has been completed and the building is assured; of this amount $15,000 has been contributed by the citizens, the remainder being provided by the Sisters of Mercy who will have charge of the institution.

Sanitary Survey Work.—The State Board of Health has made extraordinary efforts to secure funds and assistance from the legislature to allow the cooperation of the United States Public Health Service in the work of sanitary surveys and the sanitary inspection of public buildings and surroundings. Dallas County has been selected as a typical county for the health survey.

Personal.—Dr. William G. Carhart, Marion, has been elected president of the Iowa Union Medical Society.——Dr. John E. Howe, Greenfield, has been elected chairman of the reorganized state parole board.——Dr. Cleanthus E. Birney, Estherville, has resumed practice after illness with tetanus.——Dr. Philip A. Reppert, Burlington, who was operated on recently at St. Mary's Hospital, Rochester, Minn., is reported to be convalescent.

Health Car Wanted.—Dr. Guilford H. Sumner, Des Moines, secretary of the State Board of Health, is planning the purchase of a special car for the board to be used in health demonstration work throughout the state, and the state board on July 7 approved of this plan. The car will have berths at one end and the remainder will be fitted as a health exhbit, including a moving-picture outfit. Dr. Sumner is enthusiastically in favor of a state-wide movement for the celebration of public health day.

KENTUCKY

State Board Receives Awards.—The exhibit of the Kentucky State Board of Health at San Francisco has been awarded a gold medal and a prize of $1,000 on account of its completeness and efficiency.

Sanitary Survey.—P. A. Surg. L. R. Thompson, U. S. P. H. S., and Sanitary Engineer R. E. Tarbett of the same service are making Louisville their temporary headquarters for a survey or reconnaissance of the sanitary condition of the water sheds of the Ohio River and its tributaries.

Trachoma Hospital Opened.—The London Trachoma Hospital was formally opened June 15 and is under charge of a physician and two nurses and Surg. John McMullen, U. S. P. H. S., who will make regular visits to the institution and to the other institutions of similar nature which he has established at Jackson and Hindman.

Alumni Meeting.—At the annual meeting of the Alumni Association of the University of Louisville, the following officers were elected: president, Dr. Henry A. Cottell; vice president, medical department, Dr. E. P. Posey; chairman of the executive committee, Dr. Charles W. Hibbitt; chairman of the finance committee, Dr. William O. Roberts, and member Dr. Henry Enos Tuley. Dr. Cottell read an eulogy of Dr. James M. Bodine.

Personal.—Dr. Henry Enos Tuley, dean of the medical department of the University of Louisville, was operated on recently at the Norton Infirmary for an infected bursa of the right shoulder.——Dr. Abraham J. Keightley, Louisville, was struck by an automobile July 9, and slightly injured.——Dr. Elbert W. Jackson, Paducah, has succeeded Dr. Clarence P. Burnett, Paducah, as local registrar of vital statistics for the State Board of Health.——Dr. Charles H. Todd, Owensboro, was the guest of honor at a banquet given by the physicians of Owensboro and Daviess County, June 16, in celebration of the fiftieth anniversary of his settlement in Owensboro.——Dr. Thomas O. Helm, Bowling Green, has sold St. Joseph's Hospital in that city but retains possession of the institution under a lease.——Dr. Overton L. Conrad, Wilsonville, who was placed under restraint in Shelbyville awaiting an investigation as to his sanity, has been taken to Beechhurst Sanatorium, Louisville.

LOUISIANA

Ratproofing Ordinances Passed.—Without opposition, the three ordinances for the extermination of rats, which were introduced before the city council of New Orleans, were adopted June 22. These ordinances provide for fending ships from the docks, require the use of covered garbage cans, and provide other regulations for the disposal of garbage.

Conference Successful.—The health conference held at New Orleans July 15 and 16, under the auspices of the Louisiana State Board of Health and under the direction of its president, Dr. Oscar Dowling, was a marked success both as regards the attendance and the quality of the work done. In the two days' conference, pellagra, malaria, tuberculosis, rural sanitation, water supply and sewerage disposal were discussed. Of the sixty-four parishes in the state, forty-two sent representatives and there was a remarkable unanimity of opinion.

Personal.—Dr. Henry B. White, Gueydan, has been selected to succeed Dr. Sidney D. Porter, New Orleans, resigned, as health inspector, and will be attached to the staff of the health train of the State Board.——Dr. K. Winfield Ney, Madisonville, in charge of the surgical clinic of the Presbyterian Hospital, has started for Paris to work in an American Red Cross Hospital, in France.——Dr. J. Philip Lobenhoffer, on June 15, completed fifteen years of continuous service as chemist at the Touro Infirmary, New Orleans. He was presented by his assistants with a gold smoking set and the board of directors adopted a resolution expressing their keen appreciation of his services.——Dr. William T. O'Reilly, president of the New Orleans Board of Health, has filed suit at Great Falls, Mont., to be declared heir to a cattle ranch near Belt, Mont., the estate of his uncle. The value of the estate is said to be $30,000.

MARYLAND

Laboratory Addition to be Built.—Plans have been made for an addition to the medical laboratory of Johns Hopkins Medical School, to cost about $50,000.

New Surgery Opened.—The new surgery of the Maryland General Hospital, which was recently completed at a cost of $15,000, was opened to the inspection of the medical profession, July 15, and on the following day was opened for public inspection.

County Doctors Meet.—Surgery in a big steel plant and ridding Baltimore and vicinity of mosquitoes were the subjects discussed at the meeting of the Baltimore County Medical Association, held on July 21, at the Sparrows Point Club, Sparrows Point. Dr. Robert W. Johnson, Baltimore, read a paper on surgery, and William D. Wrightson, sanitary engineer, spoke of the mosquito campaign.

Personal.—After having taken an active part in the ambulance corps in France at the beginning of the war, William H. Buckler, the Baltimore scientist, is now in charge of the Austrian embassy in London. The direction of all foreign affairs in the British and European capitals has been turned over to the United States, and Mr. Buckler was considered admirably equipped for his present post.——Dr. William Burdick, Baltimore, director of the Public Athletic League, who has been in Boston in conference with school authorities

there concerning an invitation to become director of school hygiene in that city, has returned to Baltimore. Dr. Burdick has not yet reached any decision regarding the invitation. ——Dr. Frederick A. Conradi, for thirty-six years a practicing physician in East Baltimore, is seriously ill at Mercy Hospital, suffering from a complication of diseases.——Dr. Hoagland C. Davis, Baltimore, who has been critically ill at the Union Protestant Infirmary, is reported to be improving.

MASSACHUSETTS

Creel's Appointment Confirmed.—The appointment of P. A. Surg. Richard H. Creel, U. S. P. H. S., as commissioner of health of Boston, was confirmed July 8, by the civil service commission.

Tuberculosis Hospital Opened.—The new tuberculosis hospital at Everett was formally opened, July 16. The hospital has accommodations for twenty-four tuberculosis patients and an isolation ward for contagious cases.

Floating Hospital Starts Season.—The Boston Floating Hospital has opened its twenty-second annual season. The ship has been overhauled during the summer. Dr. Henry I. Bowditch is again chief physician and Dr. Paul W. Emerson has been reappointed house physician.

Personal.—Dr. Walter C. Bailey, Boston, has resigned as chairman of the board of trustees of state hospitals for consumptives.——Dr. Worthington W. Miner, Ware, has been reappointed medical examiner for Hampshire County. ——Dr. Oliver H. Howe, Cohasset, has been reappointed medical examiner for Norfolk County.——Dr. Arthur K. Stone, Boston, has been appointed a trustee of the state hospitals for consumptives.——Dr. Joe V. Meigs, Jr., Lowell, has been reappointed medical examiner for Middlesex County.——Dr. Otho L. Schofield, Wellesley, has been appointed trustee of the Norfolk State Hospital, vice Dr. William H. Prescott, Boston, resigned.——Major Dunlap P. Penhallow, Boston, who is now stationed at the American Woman's War Hospital, Paignton, South Devon, England, has been promoted to director of Unit D.

MINNESOTA

Mrs. Mayo Dies.—Less than two months after the imposing ceremonies which attended the unveiling of the statue of the late Dr. William W. Mayo at Rochester, Minn., his widow, Mrs. Louise Mayo, who was present at the ceremonies, died.

Posters to Succeed Bulletins.—Health epigrams posted in street cars are being used by Dr. Edward W. Fahey, public health director of Duluth, instead of the monthly public health bulletins, and the change is saving the city $62.50 a month.

Personal.—Dr. Harold W. Stone, Minneapolis, has sailed for Liverpool on his way to France to work under the American Ambulance in Paris.——Dr. Harold E. Robertson, Minneapolis, head of the department of pathology in the University of Minnesota, has returned home after ten months' stay in Germany.

No Federal Health Survey.—Dr. Henry M. Bracken, St. Paul, secretary of the State Board of Health, has received notice that the United States Public Health Service will not be able to make any special investigation of sanitary conditions in Minnesota this year on account of the lack of sufficient funds to conduct the work.

Contracts for Sanatorium Awarded.—Contracts were awarded by the State Board of Control, June 24, for the construction of and installation of a heating plant in the tuberculosis sanatorium at Crookston, to be constructed jointly by Polk and Norman counties and to cost $72,000, one-half of which will be paid by the state.

Southern Minnesota Medicine Men to Meet.—The midsummer meeting of the Southern Minnesota Medical Association will be held in Red Wing, August 3 and 4, under the presidency of Dr. Franklin A. Dodge, LeSueur. The Goodhue County Medical Society has charge of the entertainment of the members and has provided for a banquet, a midday luncheon and an automobile trip, and Drs. William J. and Charles H. Mayo, Rochester, will entertain the members and their wives on their steamer *Oronoco*.

Hospital News.—The Northfield Hospital Association was reorganized June 12 when the board of directors was enlarged from five to fifteen members, twelve to be elected and the remaining being the mayor of the city, the president of the Hospital Aid Association and the president of the Commercial Club. Dr. John G. Phillips, Northfield, has been elected vice president, and Dr. Warren Wilson, Northfield, secretary of the association.——A new hospital three stories in height, fire proof, 50 by 124 feet, is to be erected in the near future at Little Falls by the Franciscan sisters.

Free Antitoxin.—After August 1, as the result of an appropriation by the legislature of $5,000 for the purpose, the state will begin the free distribution of diphtheria antitoxin. The machinery for the service is being provided by the State Board of Health. At least one free antitoxin station will be established in each county, with two or more in the larger counties, and the antitoxin will be given out on the application of physicians, who must sign a receipt giving name and address of the patient for whom the antitoxin is intended. The attending physician is to determine whether or not the patient is entitled to the remedy free.

NEVADA

Personal.—Drs. Henry Bergstein, Martin A. Robison and William L. Samuels have been elected members of the Board of Health of Reno. Dr. Samuels has been selected as secretary of the board.

State Society Meeting.—The twelfth annual meeting of the Nevada Medical Association was held in Reno, June 17 to 19. On June 20 the visiting physicians were the guests of the Nevada members on a trip to Lake Tahoe and most of them went on from there to San Francisco.

NEW YORK

College Course for Health Officers.—Health Officer Frederick W. Sears of Syracuse is advocating the establishment of a special course for the health officers at the medical college of Syracuse University. He proposes that this course should cover about six weeks.

Commitment Law Enforced.—The monthly report of Iola Sanatorium, Rochester, shows that the law governing the commitment to sanatoriums of all persons suffering from tuberculosis, is beginning to be enforced. During June one man was committed to the sanatorium for carelessness in habits and for being a menace to the public health.

Personal.—Dr. F. LeRoy Purdy, Hornell, is reported to be seriously ill with typhoid fever at the Buffalo General Hospital.——Dr. John A. Sampson, professor of gynecology in the Albany Medical College, has had conferred on him the honorary degree of master of arts by Williams College.—— Dr. William G. Bissell, bacteriologist of the Buffalo Health Department, has been reappointed a member of the State Board of Medical Examiners for a term of four years.

Qualifications of Health Officers Under the State Board.—According to the decision of the New York State Public Health Council local health officers appointed after Nov. 1, 1916, shall have the following qualifications:

(1) They shall be graduates of medicine of not less than three years' standing; (2) They shall when appointed be not less than 24 nor more than 65 years of age; (3) They shall have complied with one of the following requirements: (a) They shall have taken a correspondence course in public health of one year with at least one week of practical demonstrations in laboratory and field work, both correspondence course and demonstrations to be approved by the Public Health Council, with examinations and a certificate; (b) They shall have taken a course in public health of at least six weeks, including practical laboratory and field work with lectures and reading at an educational institution, such course to be approved by the Public Health Council, with examinations and a certificate; (c) They shall have submitted evidence satisfactory to the Public Health Council of special training or practical experience in public health work, with examination if required by the council. Under special conditions, however, specified in writing by the local board of health or other appointing power or by the health officer, any of these qualifications may be waived by the Public Health Council. The council has also recommended to boards of health that in appointing health officers previous to November 1, 1916, they specify that the appointee agrees to conform to the requirements within the first year of the new term.

New York City

Norwegian Hospital to Build.—It has been decided to build an addition at a cost of $100,000 to the Norwegian Hospital, Brooklyn. The addition will be five stories in height and will cover almost as much ground as the hospital proper.

Floating Hospital Begins Season.—The *Helen C. Juillard*, the floating hospital of St. John's Guild began her trips to the Seaside Hospital at Newdorp, S. I., on July 6. The boat starts from East River piers on Mondays and Thursdays; North River piers, Tuesdays and Fridays, and Brooklyn piers Wednesdays and Saturdays.

Fire in Bellevue College.—A fire that started from unknown cause in the basement of the New York University and Bellevue Hospital Medical College, 443 First Avenue, July 1, did damage amounting to about $2,500 and caused excitement. The Bellevue Hospital on the other side of the street from the college, was not endangered by the fire.

Degree in Public Health.—It is announced that New York University has joined with the city and state health officers to fight contagious diseases and will undertake to train health officers in their work. A new degree, that of Doctor of Public Health, will be awarded to those to take the two years' course required and pass a satisfactory examination.

Fight Against Ragweed Approved.—The city board of health has adopted resolutions looking toward the eradication of ragweed from the parks in all the boroughs. At the recent meeting of the United States Hay Fever Association at Fire Island, resolutions were passed expressing the appreciation of this body of Dr. Sigismund S. Goldwater's move in this direction.

Rockefeller Institute Appointments.—Dr. Frederick Burr La Forge of the staff of the Rockefeller Institute for Medical Research has been appointed Expert in Organic Chemistry in the United States Department of Agriculture.——Dr. Benjamin S. Kline also of the staff of the institute has been appointed resident pathologist of the Montefiore Home for Chronic Invalids, and in connection with this appointment he has also undertaken work in the department of pathology of the College of Physicians and Surgeons, New York.

The Teeth and Tuberculosis.—A recent bulletin of the department of health stated that since it is of paramount importance that the teeth be kept in good condition in those suffering from pulmonary tuberculosis, all patients admitted to the various sanatoriums and tuberculosis hospitals must have their teeth placed in proper condition. For those unable to afford the services of a private dentist, the department provides the necessary treatment free through a dentist stationed at the Hospital Admission Bureau. During 1914 the number of patients thus treated was 2,688.

Fourth of July Casualties.—An investigation by the department of health showed that there were no fatal casualties attendant on the celebration of the Fourth of July, but there was an alarming increase in the number of accidents resulting from the misdirected enthusiasm of the younger celebrants, in fact, there was an increase of over 100 per cent. over similar accidents in 1914. It has been found that most of the accidents were caused by the use of blank cartridges. The board of health is of the opinion that an effort will have to be made to restimulate interest in a safe and sane Fourth.

Retail Druggists Endorse Patent Medicine Campaign.—At a meeting of the pharmacists of the city, July 2, under the auspices of the Bronx County Pharmaceutical Association, resolutions were adopted endorsing the health department's campaign against fraudulent patent medicines. This change in the attitude of the pharmacists of the city is most gratifying to the department and it is hoped that the pharmacists will now do all in their power to uphold the department of health in its endeavor to discourage the sale of the many fraudulent cure-alls foisted on the public by unscrupulous manufacturers.

Personal.—Dr. Philip Van Ingen received severe injuries in an automobile accident near Roslyn, L. I., July 13. He is at present in a critical condition.——Dr. Frederick Sefton has sailed for Liverpool on the American liner *New York*. Dr. Rosalie S. Morton has sailed on the Red Cross liner *Stephano* for Halifax and Newfoundland.——Dr. John von Schaick, who has been doing relief work among the Belgians under the Rockefeller Foundation, has returned home.——Dr. Lyman G. Barton, Jr., Willsboro, and Dr. Max A. Almy, Corning, returned from France on July 13.——Dr. William C. Sandy, Jr., of the Kings Park State Hospital, Kings Park, has been appointed medical director of the State Hospital for the Insane, Columbia, S. C.——Dr. H. Sheridan Baketel has been elected head of the department of hygiene and public health in Long Island College Hospital, Brooklyn.——Dr. Samuel Sherwell, Brooklyn, who was on duty in Paris in the Anglo-American Ambulance Corps, during the Franco-Prussian War, is revisiting Paris.

NORTH CAROLINA

Antityphoid Vaccination.—During the first two weeks of the antityphoid vaccination campaign in North Carolina, under the auspices of the State Board of Health, 17,383 persons were vaccinated in the five counties being systematically worked.

Hospital Changes Hands.—The recently completed Irvin Memorial Hospital, Mt. Airy, has recently changed hands, and will now be operated under the direction of Dr. Moir S. Martin, Stuart, Va. It is three stories in height and of first-class construction.

County Superintendent Retires.—Dr. Aristides S. Harrison, Enfield, who has served for fourteen years past as county superintendent of public schools, has retired much to the regret of a large portion of the county's best citizens who believe in direction of public school work by competent professional men.

Honor to Stiles.—Medical men in North Carolina, as well as other Southern states will read with interest the news that Yale University at its recent commencement conferred on Dr. Charles W. Stiles (for several years stationed in Wilmington, N. C., making that his home during the four years' work of the "hookworm" work in the South, who made many friends while there), the honorary degree of Doctor of Science.

PENNSYLVANIA

Personal.—Dr. J. Elmer Porter has been elected president of the staff of the Pottstown Hospital.——Dr. William W. Jenkins, Olyphant, was seriously injured at Riverside, June 21, in a collision between the motorcycle on which he was riding and a railway train.

Red Bank Opens.—The *Elizabeth Monroe Smith*, the new steamboat given for the poor children of the city by Mrs. John F. Combs, made its first trip to Red Bank Sanatorium on the Delaware River, July 14, and was dedicated at exercises which marked the thirty-ninth annual opening of the institution.

Epidemic Cost High.—The epidemic of foot and mouth disease which began in 1914 prevailed on 788 farms in thirty-four counties. More than 15,000 head of cattle and 13,000 head of swine had to be killed as a result. By the time the state and federal governments pay the bills for cattle and property taken to check the disease, it is estimated that the cost will exceed $1,350,000. This sum does not include loss to farmers or cattle raisers. Thus far the State Live Stock Sanitary Board has disbursed about $650,000, of which $445,000 was spent in appraisement of cattle for which the state paid one half and the federal government a like part and $38,000 for property destroyed. The state also paid $50,000 for disinfecting and disposing of cattle. The legislature appropriated but $625,000 for meeting the cost of the epidemic.

Philadelphia

Sanitation Parade.—Boys of the College Settlement who have been banded into a Junior Sanitary League paraded the streets near the settlement house. Their organization was formed under the direction of the division of sanitation of the Bureau of Health and the Child Federation. The banners bore various devices, such as "Swat the Fly" and "To Be Healthy, You Must Be Clean."

Personal.—Dr. James K. Young has been appointed visiting chief of the orthopedic staff of the Philadelphia General Hospital.——Dr. John H. Lock, a member of the common council of Philadelphia, is a member of the party accompanying the Liberty Bell on its journey to the Panama-Pacific Exposition.——Dr. Russel A. Smith has been appointed a resident physician at the Scranton (Pa.) State Hospital, succeeding Dr. Joseph A. Wall, New York.——Dr. Edward E. Montgomery, who was operated on for hernia a week ago in Jefferson Hospital, is convalescing.

Navy Aids War on Drugs.—On July 13, a movement was started among the officers of eight United States warships, now at League Island, to devise some means to keep the sailors from frequenting tenderloin resorts. The movement is the result of an investigation into the death of a sailor on board the Battleship Illinois, who was drugged by women of the Chinatown district. In order to end any incipient drug habit among the men as a whole, John W. Glover, a deputy internal revenue collector, furnished the officers with a list of all places where drugs are sold in Philadelphia within the knowledge of the Internal Revenue Office.

Keen Fellowship Established.—Prof. William W. Keen has established the Corinna Borden Keen Research Fellowship in Jefferson Medical College, the income from which now amounts to $1,000. The gift provides that the recipient of the fellowship shall spend at least one year in Europe, America or elsewhere (wherever he can obtain the best facilities for research in the line of work he shall select,

after consultation with the faculty) and that he shall publish at least one paper embodying the results of his work as the "Corinna Borden Keen Research Fellow of the Jefferson Medical College." Applications stating the line of investigation which the candidate desires to follow, should be forwarded to Dr. Ross V. Patterson, Sub-Dean, Jefferson Medical Medical College, Philadelphia.

TENNESSEE

Leper Sent to Louisiana.—Curley Nickol, a leper of Dickson County, after investigation has been sent to the leprosarium in Louisiana.

Personal.—Dr. Guy O. Shirey, Memphis, has returned after several months in the war zone.——Dr. Oscar Nelson, a recent graduate of the medical department of Vanderbilt University, Nashville, has been assigned to the Methodist-Episcopal Hospital, Huchow, China, and will sail from San Francisco, August 25.——Lucius P. Brown, state food and drug commissioner of Tennessee, has resigned to accept the directorship of the bureau of food inspection of the New York Department of Health.——Dr. John D. Brewer, Newbern, has been appointed a member of the State Board of Examiners for Nurses.——Dr. Walter J. Miller, Johnson City, has been appointed a member of the State Board of Health.

CANADA

University News.—According to a special war issue of *Varsity*, the official organ of the students of the University of Toronto, 1,868 students were enrolled last session in the Canadian officers' training corps. Of that number 349 furnished the department of medicine.

Gazetted to the R. A. M. C.—The following medical men attached to the Canadian medical corps have been gazetted to temporary lieutenancies in the royal army medical corps: A. M. Fisher, S. S. King, C. D. Hamilton, W. J. Grant, G. A. Greaves, W. C. Gowdey, H. Lasnier, C. W. Morris, A. J. Lomas, T. J. Costello, W. W. Patton, J. J. Thomson, W. F. McDonald, F. J. Brodie, W. P. Macksiy, G. W. Whitman, H. S. Moore, B. Lang, A. F. Thompson, J. S. Chisholm, G. F. Hill, H. M. Godfrey, N. Macdonald, R. E. Johnston, and the following noncommissioned officers and men of the Canadian army medical corps have been gazetted to temporary lieutenancies: Sergeant-Major Kidd, Sergeant MacLachlan, Sergeant McQuay, Corporal Coulter, M. C. Burke and A. D. Forbes.

Hospital News.—The Gore Street Church, Hamilton, Ont., has been turned into a military hospital with accommodation for fifty patients. The medical officers are Drs. Douglas G. McIlwraith and Wellington M. Carrick.——Dr. Charles J. C. O. Hastings, M. O. H., Toronto, strongly favors the amalgamation of the Western, Grace and the Orthopedic hospitals, Toronto.——The Brockville General Hospital will have paid to it in October next $400,000, a bequest from the estate of the late Senator Fulford of that town. The money is to be expended in erecting and maintaining an aged women's home in connection with the hospital.——Through the efforts of the College of Physicians and Surgeons of Saskatchewan, the government of the province has offered to equip and maintain a field hospital during the war.——The Canadian Red Cross Hospital at Cliveden, England, is the recipient of $60,000 from Mr. and Mrs. A. S. Hardy and Mrs. Fulford, Brockville, Ont.; Colonel and Mrs. Gooderham, Toronto, have given to the same hospital $2,500 for a recreation room; the Misses Janes, Toronto, have equipped the operating room at a cost of $2,100. There are now about 1,000 beds in the hospital.——The New Brunswick branch of the Canadian Red Cross Society has provided eighty-two beds for the Duchess of Connaught Hospital and a special New Brunswick ward has been organized.

Personal.—Dr. Edward Kidd, Trenton, Ont., has gone to the front with the army medical corps as lieutenant-colonel.——Hon. W. H. Montague, M.D., formerly minister of public works in the Rodmond cabinet, Man., and some time secretary of state for Canada, has gone to the front with the army medical corps.——Dr. Barritt E. Kelly, Peterborough, Ont., joined the army medical corps at Folkstone, England, and is now in France.——Dr. Alexander Fisher, formerly superintendent of the Port Arthur General Hospital, has been appointed medical superintendent of the hospitals in Calgary, Alta.——Lieut.-Col. George Atchison, M.D., is in charge of a recruiting office in Hamilton, Ont.——Drs. Forbes E. Godfrey, Mimico, Ont., and Harvey Clare, Toronto, have returned from the Barbadoes.——Hon. Dr. Thomas S. Sproule, M. P., Markdale, Ont., speaker of the Canadian House of Commons, after having represented East Grey continuously for thirty-seven years in the house, has announced his retirement. Dr. Sproule is mentioned for a seat in the Canadian senate.——Dr. Robert Hutton, Rosthern, Sask., passed through Toronto recently on his way to England to volunteer for service in the British army medical corps.——Dr. Roland W. Young, Oshawa, Ont., failing to secure an appointment for service in Ontario, has gone to England to volunteer for the British army medical corps, or for service in Serbia.——Hon. Robert A. Payne, M.D., Toronto, minister of education for Ontario, who is in England in connection with the offer of the Ontario government to establish a hospital there for wounded soldiers, has been gazetted lieutenant-colonel for the army medical service and honorary colonel of the Canadian militia.——Prof. Irving Heward Cameron of the University of Toronto, who has been in England some weeks as honorary consulting surgeon to St. George's Hospital, London, has been gazetted lieutenant-colonel of the British army medical corps.

GENERAL

Obstetricians and Gynecologists to Meet.—The American Association of Obstetricians and Gynecologists will hold its twenty-eighth annual meeting at the Hotel Schenley, Pittsburgh, September 14 to 16, under the presidency of Dr. Charles L. Bonifield, Cincinnati. An attractive program has been prepared.

Eye, Ear and Throat Specialists to Meet.—The twentieth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in Chicago, October 5-7, under the presidency of Dr. Joseph C. Beck. On the day before the meeting and the two days following, clinics will be held at the various Chicago hospitals where members are expected and will be welcome. The headquarters will be at the Hotel Sherman.

Central District Association Meeting.—The annual meeting of the Iowa and Illinois Central District Medical Association was held in Davenport, July 8, and the following officers were elected: president, Dr. Charles S. Young, Geneseo, Ill.; vice president, Dr. David S. Fairchild, Clinton, Iowa; secretary, Dr. Lawrence W. Littig, Davenport, Iowa; treasurer, Dr. Frank H. First, Rock Island, Ill., and reporter, Dr. William D. Chapman, Silvis, Ill.

Tri-State Society Meeting.—The annual meeting of the Tri-State Medical Society of Arkansas, Louisiana and Texas will be held at Marshall, Tex., December 14 and 15. At this meeting three medals will be awarded for the three best essays on original work done throughout that year. The contest is limited to physicians residing in Arkansas, Louisiana and Texas. For particulars apply to Dr. Jacob M. Bodenheimer, secretary-treasurer, Shreveport, La.

Northern Tri-State Physicians Meet.—The forty-second annual meeting of the Northern Tri-State Medical Association of Michigan, Ohio and Indiana, was held in Ann Arbor, Mich., July 14. Toledo was selected as the place for the semiannual meeting in January and the following officers were elected: president, Dr. Frederick Shillito, Kalamazoo, Mich.; vice president, Dr. Julius H. Jacobson, Toledo, Ohio; secretary, Dr. George W. Spohn, Elkhart, Ind.; and treasurer, Dr. Joseph A. Weitz, Montpelier, Ohio.

Bequests and Donations.—The following bequests and donations have recently been announced:

Lincoln Hospital, Durham, N. C., a donation of $1,500, to pay a part of the expense incurred in erecting a dormitory for nurses, from Messrs. B. N. and J. B. Duke.

Lowell, Mass., General Hospital, $50,000; House of Mercy Hospital, Pittsfield, $50,000, by the will of Frederick S. Pierson, Great Barrington, Mass., who lost his life on the *Lusitania*.

For the construction of hospitals at Milton and Duxbury, Mass., two funds of $6,000 each, by the will of William Bradford Weston, Milton. These funds remain in trust for 100 years at 4 per cent. interest. New England Hospital for Women and Children, for a Charlotte Louisa Weston free bed; Massachusetts General Hospital for a William Bradford Weston free bed and Vincent Memorial Hospital for a William Bradford Weston free bed, each $15,000, payable twenty years after the death of the last of the thirty-one relatives named in the will. The testator directs that the Duxbury Hospital be named the King Caesar Hospital, after his great, great grandfather, and that the Milton Hospital be known as the Weston Hospital.

Jefferson Hospital, Philadelphia, a contingent bequest of $15,000, to establish three beds to be known as the "Wilson Memorial Beds for the Benefit of Reduced Gentlemen," by the will of Annie M. Wilson.

Jewish Hospital, Methodist Hospital, Jewish Maternity Hospital and Episcopal Hospital, Philadelphia, each $5,000, by the will of Mrs. Mary Van Beil, for the endowment of beds in memory of her husband, David Van Beil.

Jefferson Hospital, Howard Hospital and Hospital for Diseases of the Lungs, Philadelphia, each $500, by the will of the Countess Galli.

Tufts College, Boston, Mass., $500,000, by the will of Dr. Frederick S. Pierson.

FOREIGN

Our Yucatan Exchange.—The January, 1915, number of the *Revista Medica de Yucatan* is issued under date of June 5, with an apology saying that the abnormal circumstances through which the country is passing, the lack of paper, and the difficulty in getting printing done have all contributed to the delay. The *Revista* is the organ of the Yucatan Medical Association, and the leading article in this January to June number is by the president and editor, Dr. H. Ayuso, on the value of strychnin in reviving and regulating the breathing when in the course of disease the respiration has become shallow and fast. He has also found strychnin invaluable in hysteria and in nervous collapse from overwork or emotional stress. He reports five typical and illustrative cases.

WAR NOTES

Surgical Unit Returns.—The Harvard Surgical Unit, which has been stationed at the American Ambulance Hospital, Paris, during April, May and June, terminated its service, July 1, and has returned home.

Epidemic Diseases in the War Zone.—It is reported that Asiatic cholera and smallpox are raging in Galicia; that 120 cases of cholera were reported from Lemberg on July 13, and 419 cases of smallpox in the province between July 4 and 10. ——Cholera is said to be increasing among the Austrian troops, especially those which have recently returned from Galicia.

Gratitude for Medical Supplies.—A letter has been received by Mrs. Francis McM. Bacon, Jr., of the New York Vacation War Relief Committee, from Captain Conrad G. Geggie of the Canadian army medical corps, thanking the committee for medical supplies which were received at a time when the Canadian division assisted and supported by the territorials had just been in a series of attacks on the enemy's lines during which casualties were very heavy.

Fighting at the Front.—This was the subject of an address which Dr. William Ahlstrom delivered at the weekly meeting of the University Forum of America. Dr. Ahlstrom has been working with the Red Cross in the American Ambulance Corps in France. He stated that there were now 600 beds and fifty surgeons in the American Hospital. The hospital fed 700 daily. Practically all the wounds which were treated were infected. The men were eager to return to the firing line and some came to the hospital and returned to the lines as many as five times.

Baby Hospital in Serbia.—The American Red Cross has made arrangements for the establishment of a baby hospital in Serbia, which will be known as the Mabel Grouitch Baby Hospital in recognition of the Red Cross activities of Mme. Slavko Grouitch, wife of the under secretary for foreign affairs of Serbia. The hospital will be in charge of Dr. Louise Taylor Jones, Washington, and Dr. Catherine H. Travis, New Britain, Conn., who sailed on the Greek steamer *Constantinos*, from New York for the Piraeus, July 19. Dr. Jones will act as medical director of the hospital and expects to return to Washington in October, leaving the hospital in charge of Dr. Travis. Through the American Red Cross, $6,300 has been contributed thus far for the baby hospital. On July 30, two American Red Cross trained nurses will be sent to join the hospital and will carry with them additional supplies.

Lipton Praises American Surgeons.—Sir Thomas Lipton, in a recent communication, classes the work of the American surgeons and nurses in Serbia as miraculous. "The first time I was at Ghevgheli," Sir Thomas wrote in picturing the transformation in Serbia, "there were 1,400 patients there, mostly with typhus. When I was there the other day there were only three typhus cases." He described as "miraculous" the work of Dr. Richard B. Strong, the Harvard professor of tropical diseases, in charge of the American sanitary commission in Serbia and Montenegro, and his staff. "Their work is miraculous. Many hospitals where they have been working which I visited the last time I was in Serbia were full of typhus cases, but when I called this time they had no typhus cases. At Uskub, Dr. Strong's headquarters, some of the hospitals are closing up. I could hardly believe that the staff you sent out here could have made such a change. The terrible sights that I witnessed in connection with typhus when I was in Serbia the last time now are finished. What is now badly needed is for the country to be put in a proper sanitary condition to prevent these epidemics in the future."

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ending July 17, 1915, lists the following contributions:

Muskegon-Oceana Medical Society, Muskegon, Mich.	$ 25.00
Dr. Robert F. Taylor, Philadelphia, Pa.	5.00
Dr. Francis Reder, St. Louis, Mo.	10.00
Dr. Charles D. Lockwood, Pasadena, Calif.	5.00
Dr. J. W. Ellenberger, Harrisburg, Pa.	5.00
Dr. Charles N. Dowd, New York, N. Y.	25.00
Receipts for the week ending July 17	$ 75.00
Previously reported receipts	7,625.84
Total receipts	$7,700.84

Previously reported disbursements:

1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at 2.30	2,930.20	
353 standard boxes of food at 2.28	804.84	
Total disbursements		7,310.04
Balance		$ 390.80

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

LONDON LETTER

LONDON, July 9, 1915.

The Substitutes for Salvarsan and Neosalvarsan

At a meeting of the London Dermatological Society, Major E. G. Ffrench, of the army medical corps, made an important communication on this subject. He referred to the report by the secretary of the National Medical Research Committee appointed to inquire into the substitutes for salvarsan and neosalvarsan which had been rendered necessary when the war cut off the supply of the German preparations. The substitutes are kharsivan and neokharsivan (manufactured in this country) and novarsenobenzol "Billon" (manufactured by Poulenc Frères, France). It may be remembered that it was stated in a previous letter to THE JOURNAL that the chemistry of kharsivan and neokharsivan is identical with that of salvarsan and neosalvarsan. The committee concluded that the substitutes might safely be used in the treatment of syphilis. However, some clinicians maintain that the new preparations are more toxic. Major Ffrench said that after treating over 100 cases of syphilis in all stages with the substitutes he came to the conclusion that kharsivan and neokharsivan are somewhat more toxic than salvarsan and neosalvarsan. Of 136 injections of kharsivan, 60 per cent. gave no reaction; 27 per cent. gave slight reaction, such as headache, slight temperature, vomiting, rigor and diarrhea, and 13 per cent. gave a severe reaction of the symptoms mentioned. Of 124 injections of salvarsan, 63 per cent. gave no reaction, 33 per cent. a slight reaction, and only 4 per cent. a severe one. Of twenty-five injections of neokharsivan, 32 per cent. gave no reaction, 40 per cent. slight reaction, and 28 per cent. severe. Of seventy-five injections of neosalvarsan, 72 per cent. gave no reaction, 21 per cent. slight, and only 7 per cent. severe. Of novarsenobenzol, forty-two injections were given; 76 per cent. gave no reaction, 19 per cent. slight reaction, and 5 per cent. a severe one. Major Ffrench has not experienced any serious results in the use of these substitutes, and believes that kharsivan and neokharsivan are excellent substitutes for salvarsan and neosalvarsan. So far as his experience has gone, they may be safely recommended for the treatment of all forms of syphilis.

Conscription and Eugenics

It is often pointed out that the war is taking its death toll from the best of our population—healthy men in the prime of life who have volunteered to serve their country in the hour of danger, while it leaves the unfit and the pusillanimous. Major Darwin in his presidential address on "Eugenics During and After the War" delivered before the Eugenics Education Society said if conscription were adopted future wars would produce less injury to the race, because the casualty lists would more nearly represent a chance selection of the population, though whether a conscript army would ever fight as well as our men were doing in France was very doubtful. Military training was eugenic if the men were kept with the colors only for short periods. Officers must, of course, be engaged for long periods, and among them the birth rate was very low. An increase of pay would be beneficial in this respect if given in the form of an additional allowance for each living child. In the hope

of increasing the birth rate attempts were likely to be made to exalt the "unmarried wife," a detestable term against which he protested. Promiscuous intercourse unfitted persons for married life and increased the spread of sterilizing disease. A special effort ought now to be made to maintain the high standards of home life which had been in large measure the basis of our social and racial progress.

Anthrax and Shaving Brushes

At an inquest on a lawyer clerk, aged 38, it was stated that he had a pimple on the neck after shaving, and the following day his neck swelled so badly that he went to the West London Hospital, where he died. An examination of the blood was made and anthrax bacilli were discovered. There was no evidence that he had been in contact with any animal. A London county council veterinary surgeon said that there had been no case of anthrax north of the Thames since last August. The disease was generally conveyed by personal contact with animals. It might have been conveyed by means of a shaving brush, for the hair of various animals was used in the manufacture of shaving brushes. He could not account for the infection in any other way. The moral seems to be that when one buys a shaving brush one ought to disinfect it before use.

PARIS LETTER

PARIS, July 1, 1915.

The War

REDUCTION OF THE HOSPITAL PERIOD IN CASES OF SOLDIERS AFFECTED WITH CHRONIC OR RELAPSING CONDITIONS

The minister of war has just called the attention of all the military physicians to the necessity of avoiding unnecessary encumberment of the hospitals and expense to the government by reducing, as much as possible, the number of men retained in hospitals for chronic conditions which do not require immediate attention. Some of these men have no lesions or functional troubles sufficiently important to keep them from, at least, the auxiliary service. Others are affected with persistent or easily relapsing conditions which are serious enough to disqualify them for regular service and which do not appear likely to improve rapidly and permanently under treatment. These men should be given a furlough or even discharged. The circular calls attention to the fact that many men affected with cutaneous diseases, such as discrete psoriasis, light impetigo or dry eczema, come within one or another of these categories. The circular recommends the employment of suitable doses of mercurous iodid at regular intervals in many syphilitics to prevent the reappearance of contagious lesions which would necessitate patients being sent to the hospital.

THE EMPLOYMENT OF WAR CRIPPLES

To aid in the study of the question of the employment of war cripples, many of whom are compelled to change their occupation, the administration has just addressed to the chambers of commerce, associations of employers and workmen and heads of industries a list of questions with the following objects: (1) to ascertain the possibility of the cripple's pursuing his former occupation to a greater or less extent; (2) if this is impossible, to learn occupations in which after a new apprenticeship, he would be able to gain a complete or partial livelihood. The circular contains a list of important mutilations (loss of an eye, an arm, etc.), and opposite each one is to be noted the possibility or impossibility of following the occupation in question entirely or partially and in the latter case the loss of industrial value expressed by a decimal fraction. The data thus gathered will make it possible to take measures for the foundation of workshops for training cripples.

TREATMENT OF ABDOMINAL WOUNDS IN AMBULANCES AT THE FRONT

At one of the last sessions of the Société de chirurgie, Professor Quénu reported some observations on abdominal wounds which had been sent to him by Agrégé Professor A. Schwartz and Drs. Bouvier and Caudrelier. Schwartz reported nine operations for abdominal wounds and Bouvier and Caudrelier reported thirty-two. These forty-one observations bear on a question which, after eleven months of war, divides surgeons of the highest reputation.

The nine cases of Schwartz comprised eight cases of perforation of the small intestine and one case of wound of the spleen, mesocolon and the large epiploon. From the nine operations there were two complete recoveries, two operative recoveries (one death from tetanus and one from progressive exhaustion) and five relapses, one of which was perhaps attributable to the patient's imprudence. As bearing on these results, Schwartz reports ten cases of abdominal wounds in which he did not operate either because it was too late or because he thought operation too precarious. Three of these patients recovered under expectant treatment. From the crude statistics alone the proportion of recoveries is about the same in the series of ten cases in which operation was not performed as in the series of nine operative cases. Notwithstanding, Schwartz is a decided advocate of operation in abdominal wounds.

Thirty-two laparotomies performed by Bouvier and Caudrelier comprised seventeen cases of perforation or laceration of the small intestine and five cases of perforation of the large intestine, etc. Altogether, these thirty-two laparotomies resulted in fourteen recoveries and eighteen deaths, that is, 45 per cent. of recoveries. This is a very good percentage. It may be said that Bouvier and Caudrelier were much favored by the exceptional situation of their ambulance in proximity to the trenches. This is true, but, on the other hand, they also had the disadvantage of the situation. They operated systematically in all cases no matter how serious they were. Certain patients who had lesions such as a severed external iliac artery or renal artery, a rupture of the liver, eight cases of severed small intestine with three cases of severed transverse colon, etc., would certainly have not been operated on if they had had to undergo transportation for any distance whatever. They would have died early without operation and would not have burdened the statistics of an ambulance placed a little further in the rear. While its statistics have not benefited by delay, by transportation or by selection, it is true that the ambulance benefited from its proximity to the trenches which not only permitted the patient to be brought promptly to the surgeon, but also avoided the evil results to a patient with a perforated intestine from long transportation which would have permitted the diffusion of fecal matter in the abdomen. Operation does not seem to have been conducive to death in any case. It was perhaps useless in three cases, but it saved at least eleven or twelve lives. This confirms the opinion of Schwartz as to the necessity of operating in abdominal wounds. A good surgeon may, if he operates soon after the wound and under good conditions, ensure recovery in cases of abdominal wounds which otherwise would be fatal. Given a good surgeon and a suitable equipment, the question of early operation depends, evidently, on the character of the battle, possibility of relief and the rapidity and suitability of means of transportation. Abdominal surgery cannot fail to profit by the new surgical automobiles which I mentioned in a previous letter (THE JOURNAL, May 29, 1915, p. 1861).

Marriages

FELIX GRAY SMITH, M.D., Long Beach, Cal., to Miss Emilie Mae Smith of New Haven, Conn., at Los Angeles, June 19.

ARNOLD FROTCHAM FURRER, M.D., to HELEN HEMPSTEAD, M.D., both of Cleveland, at Meadville, Pa., June 29.

ROBERT GRANVILLE HALL, M.D., to EDITH ADELLE MACDOWELL, M.D., both of Portland, Ore., June 30.

CHARLES NASH MEADER, M.D., Denver, to Miss Marian L. Learned of Colorado Springs, Colo., July 6.

KATE MCCOOL TAGGART, M.D., and Mr. Arthur Albert Schley, both of Beaver Falls, Pa., June 1.

WILLIAM FRANKLIN MOLT, M.D., to Miss Olive Richards, both of Indianapolis, at Boston, July 6.

HENRY ELLIS PETERSON, M.D., Graceville, Minn., to Miss Jennie Marie Auld of St. Paul, June 30.

HORACE LEE GALLAWAY, M.D., to Miss Lillian Sherwood Gray, both of Anthony, Kan., June 3.

THEODORE JOHN GUNTHER, M.D., to Miss Minnie Albrecht, both of Sheyboygan, Wis., recently.

JAMES JOSEPH MURPHY, M.D., to Miss Mae Peterson, both of Cedar Rapids, Iowa, July 1.

EARL R. DEZELL, M.D., to Miss Ethel Tryphena Monahan, both of Minneapolis, in June.

FELIX J. MACIEJEWSKI, M.D., La Salle, Ill., to Miss Angela Piszczek of Peru, Ill., June 2.

Deaths

Francis Delafield, M.D. College of Physicians and Surgeons in the City of New York, 1863; aged 73; emeritus professor of medicine in his Alma Mater; who was made surgeon to the New York Eye and Ear Infirmary and pathologist to the Roosevelt Hospital in 1871; became physician to Bellevue Hospital three years later and consulting physician in 1885, holding this position until his death; also consulting physician to St. Luke's Hospital; adjunct professor of pathology and practice of medicine, from 1875 to 1882, and professor of these subjects in the College of Physicians and Surgeons until 1901; president of the Association of American Physicians in 1886; author of several standard text books on pathological anatomy and physical diagnosis; died at the home of his sister in Noroton, Conn., July 17.

Robert Hugh Mackay Dawbarn, M.D. College of Physicians and Surgeons in the City of New York, 1881; aged 55; a Fellow of the American Medical Association; a member of the New York Surgical Society, American Association of Anatomists, and New York Academy of Medicine; clinical professor of surgery in Fordham University School of Medicine, New York City, and emeritus professor of surgery in the New York Polyclinic Medical School; local surgeon of the New York and New England Railway; visiting surgeon to the New York City Hospital and consulting surgeon to the New York Polyclinic Hospital; well known for his work in plastic surgery; died at his home in New York City, July 18.

Rell Madison Woodward, M.D. Miami Medical College, Cincinnati, 1887; aged 53; surgeon in the United States Public Health Service with last station at San Francisco in charge of the hospital at the Panama-Pacific Exposition; a Fellow of the American Medical Association; who had been in the Public Health Service since 1887, devoting his time and attention chiefly to the reorganization and administration of hospitals; died in Rochester, Minn., about July 16, after an operation for the closure of a discharging sinus remaining after an operation on the gallbladder. The body was taken to Anderson, Ind., for interment.

Frederick T. Bicknell, M.D. Rush Medical College, 1870; aged 73; a Fellow of the American Medical Association; once president of the Southern California Medical Society and the Los Angeles County Medical Association; one of the organizers of the Medical Department of the University of California and for many years professor of gynecology in that institution; a veteran of the Civil War; for ten years president of the California Hospital Association; died at his home in Los Angeles, July 6, from pneumonia.

James Albert Bennett, M.D. New York Homeopathic Medical College, New York City, 1871; aged 72; who soon gave up the practice of medicine to become an official of the Consolidated Gas Company of New York and for the last twelve years has been its treasurer; also treasurer of the Astoria Light, Heat and Power Company; and an official and director in a number of similar enterprises and banks; died at his home in New York City, July 7.

Charles Upham Shepard, M.D. University of Göttingen, Germany, 1867; aged 71; known as the "father of the tea industry in America" because of his success in growing tea on a large scale in the United States for the commercial market; a specialist in physiologic chemistry and an extensive investigator and writer on chemical and agricultural subjects; died at his home, the Pinehurst Tea Farm, Summerville, S. C., July 4.

Lewis H. Adler, M.D. University of Maryland, Baltimore, 1859; Jefferson Medical College, 1871; aged 73; surgeon of U. S. Volunteers during the Civil War; a retired practitioner of Philadelphia and for many years a member of the staff of Jefferson Hospital; president of the Alumni Association of the University of Maryland School of Medicine; died in the Methodist Hospital, Philadelphia, July 15, from uremia.

Erasmus Newton Sartell, M.D. Rush Medical College, 1893; aged 58; of Janesville, Wis.; a member of the State Medical Society of Wisconsin; formerly health officer of Watertown, Wis., and surgeon for the railways centering in that city, and local surgeon of the Milwaukee, Lake Shore and Western Road at Janesville; died in the Mendota (Wis.) State Hospital, July 1, from pneumonia.

Mary E. Jackson, M.D. Physio-Medical College of Indiana, Indianapolis, 1887; Chicago College of Medicine and Surgery, 1895; aged 64; of Hammond, Ind.; professor of electro-therapeutics in her Alma Mater; an ardent temperance advocate and one of the organizers of the National Congress of Mothers; died in the Lutheran Deaconess Hospital, Chicago, from sarcoma, July 7.

Edward C. Schoonmaker, M.D. University of Minnesota, Minneapolis, 1899; aged 43; a Fellow of the American Medical Association; formerly surgeon to St. James' Hospital and village physician and chairman of the Board of Health of Perham, Minn.; died at his home in Mercedes, Texas, July 4, as the result of a gunshot wound of the head, self-inflicted it is believed with suicidal intent.

Frank Homer Dent, M.D. College of Physicians and Surgeons, Chicago, 1906; aged 36; a Fellow of the American Medical Association; a veteran of the Spanish-American War; for several years a practitioner of Wabash, Ind., but for the last year a resident of Kokomo, Ind.; died in the Methodist Hospital, Indianapolis, July 9, eight days after an operation for intestinal adhesions.

James Bertrand McEvoy, M.D. Fort Wayne (Ind.) College of Medicine, 1896; aged 41; a Fellow of the American Medical Association; first intern at the Indiana School for Feeble-Minded Youths; died at his home in Fort Wayne, July 7. At a meeting of the Fort Wayne Medical Society, July 8, resolutions were adopted voicing the esteem and regret of the local profession.

Everett Alanson Sherill, M.D. University of Maryland, Baltimore, 1912; aged 29; for a year and a half assigned to the care of the tuberculosis division of Bellevue Hospital, New York City, where he contracted tuberculosis; since that time in pursuit of health at Saranac Lake, N. Y., and Black Mountain, N. C.; died at his home in Statesville, N. C., July 1, from tuberculosis.

Charles W. Evans, M.D. Starling Medical College, Columbus, Ohio, 1887; aged 53; a Fellow of the American Medical Association; for fifteen years a practitioner of Russellville, Ohio, but since 1903 a resident of Los Angeles; for nine years physician for the Hollenbeck Home for the Aged, Los Angeles; died at his home, June 14, from tuberculosis of the lungs.

James Howard Taylor, M.D. Bellevue Hospital Medical College, 1871; aged 64; a member of the State Medical Association of Texas; chief surgeon of the Texas Southern Railway; physician of Harrison County, Texas; for twenty years Grand Medical Advisor of the Ancient Order of United Workmen; died at his home in Marshall, Texas, July 5.

Charles H. Burvenich, M.D. Central Medical College, St. Joseph, Mo., 1897; aged 39; a Fellow of the American Medical Association; contract surgeon in the Army during the Philippine campaign and also transport surgeon in the British service during the Boer War; died at his office in Denver, July 2, from acute dilatation of the heart.

Alonzo Irie Goddard, M.D. Jefferson Medical College, 1913; aged 32; who after an internship in New York City located in Hutchinson, Kan.; died in Stewart Hospital, Hutchinson, July 6, two weeks after an operation for appendicitis. At a special meeting of the Reno County Medical Society, resolutions of condolence were adopted.

Josiah Jones, M.D. Rush Medical College, 1890; aged 50; of Tacoma; a member of the Washington State Medical Association; and a well-known specialist on diseases of the eye, ear, nose and throat; was almost instantly killed, July 5, on the Tacoma-Seattle highway, by the overturning of his automobile.

August F. Kerstan, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1879; aged 77; of Beirne, Ark.; assistant city physician of Beirne; surgeon to the municipal prison and formerly physician and surgeon to the City Hospital, Atlanta, Ga.; died at his home, July 6.

Theodore Writer, M.D. Bellevue Hospital Medical College, 1866; aged 77; a member of the Medical Society of the State of New York, and for many years a practitioner of Otisville, N. Y.; died, July 9, in a hospital at Chautauqua, N. Y., where he had gone for a surgical operation.

Sherman Kemlo Ingle, M.D. Indiana University School of Medicine, Indianapolis, 1909; aged 42; a Fellow of the American Medical Association; for five years a resident of Evansville, Ind.; died in Hot Springs, Ark., July 1, from chronic interstitial nephritis.

William S. Armstrong (license Oregon, 1903); aged 52; of Portland; a practitioner since 1889 and formerly assistant local surgeon of the C. & E. Railway; a specialist on diseases of the eye, ear, nose and throat; died in the Portland Surgical Hospital, July 3.

William T. Harris, M.D. Homeopathic Medical College of Missouri, St. Louis, 1888; aged 73; for many years a practitioner of Keosauqua, Iowa, but for the last year and a half a resident of Galesburg, Ill.; died at his home in that place, June 27.

Thomas Doolin, M.D. Hospital College of Medicine, Louisville, 1879; aged 78; a member of the Missouri State Medical Association; fell from a window of his office in Ash Grove, Mo., July 6, and died from his injuries a few hours later.

Victor Albert Ellsworth, M.D. University of Buffalo, 1876; aged 69; for twenty-one years superintendent of the Washingtonian Home, Boston; and an ardent temperance advocate; died at his home in Boston, July 4, from nephritis.

Thomas Aloysius Maloney, M.D. New York University, 1898; aged 40; of Springfield, Mass.; a Fellow of the Massachusetts Medical Society; died at the home of his mother in New Britain, Conn., July 13, from a nervous breakdown.

John A. Reyburn, M.D. Medico-Chirurgical College of Philadelphia, 1889; aged 46; a member of the West Virginia State Medical Association; died at his home in Ravenswood, W. Va., about July 5, from carcinoma of the stomach.

Menotti Mazza, M.D. Royal University, Naples, Italy, 1896; aged 46; a prominent Italian practitioner of Philadelphia; president of many Italian philanthropic and benevolent institutions; died at his home, July 5, from sarcoma.

Susan McGlaughlin Snyder, M.D. University of Michigan Homeopathic Medical College, 1887; aged 54; for twenty years supreme physician of the Royal Neighbors of America; died at her home in Council Bluffs, Ia., July 6.

Abraham Lewis Lengfeld, M.D. Cooper Medical College, San Francisco, 1871; aged 64; a Fellow of the American Medical Association; also a druggist; died at his home in San Francisco, June 19, from myocarditis.

Francis Embury Tibbitts, M.D. Western Reserve University, Cleveland, 1888; aged 49; a Fellow of the American Medical Association; died at his home in Geneva, Ohio, July 5, from heart disease.

John S. Graves, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1885; aged 53; of Inman, Kan.; died in the McPherson Hospital in that city, from the effects of gallstones.

Samuel L. Merrill, M.D. University of Nashville, Tenn., 1865; formerly of Jefferson County, N. Y.; surgeon of volunteers during the Civil War; died in North Adams, Mass., July 8.

John E. McTaggart, M.D. University of Buffalo, 1871; aged 76; formerly of Marine City, Mich., and later of Detroit; died at his home in Detroit, May 12, from senile debility.

Herbert B. Thomas, M.D. North Carolina Medical College, Charlotte, 1898; aged 40; died at his home in Burgaw, N. C., April 10, from pneumonia.

Elmer Elwood Hall, M.D. Chicago College of Medicine and Surgery, 1903; aged 50; died at his home in Chicago, June 21, from tuberculosis.

John A. Johnson, M.D. Atlanta (Ga.) Medical College, 1855; aged 79; formerly of Calhoun, Ga.; died at his home in Atlanta, June 30.

Robert Peel Aikman, M.D. Victoria College, Coburg, Ont., 1868; aged 73; died at his home in Grimsby, Ont., April 13, from pneumonia.

Alliston Chester Wilbur, M.D. Boston University, 1895; aged 45; died at his home in Middleboro, Mass., June 24, from nephritis.

James C. McDade, M.D. Medical College of Georgia, Augusta, 1872; aged 68; of Cecil, Ala.; died in Montgomery, Ala., June 23.

Daniel V. Seay (license, Tennessee, 1889), aged 87; formerly of Nashville, Tenn.; died in Philadelphia, about June 20.

Joshua M. C. Burger, M.D. University of Nashville, Tenn., 1869; aged 78; died at his home in McMinnville, Tenn., June 27.

John S. Meeks, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1883; died at his home in Gunter, Tex., July 2.

Charles Wesley Adkins, M.D. University of Louisville, Ky., 1868; died at his home in Scottsboro, Ala., June 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

CONVICTIONS UNDER THE FOOD AND DRUGS ACT

O'NEIL'S MALT WHISKEY

In October, 1913, several cases of a product labeled "O'Neil's Pure Malt Whiskey" were shipped from the state of Illinois into the state of Michigan. In April, 1914, the United States attorney filed a libel for the seizure and condemnation of this product charging that the stuff was misbranded in violation of the Food and Drugs Act. Some of the claims that appeared on the labels and circulars around the bottles were:

"The World's Best Medicine."

"An invaluable remedy in all cases of Consumption, 'Grippe,' Coughs, Colds, Dyspepsia, Bowel Trouble, Catarrh and all Bronchial Affections."

"It restores lost vitality, quiets the nerves, tones up the entire system and retains the freshness and vigor of youth."

"As a preventive of Catarrh, O'Neil's Pure Malt Whiskey is very successful."

"It is in this great work of preventing consumption . . . that O'Neil's Pure Malt Whiskey is making a great record."

These were but some of the absurdly fraudulent claims made for the nostrum. The government officials contended that the product was misbranded as analysis revealed that "it was not a medicinal substance or mixture of substances that could be relied on for the prevention or treatment of tuberculosis." Furthermore, the analysis proved that the stuff was of such composition that "it was utterly inefficient of itself for the treatment of, or for the prevention of, tuberculosis or for the prevention of catarrh."

In September, 1914, no claimant having appeared for the property, the judge ordered the stuff condemned and forfeited. After the objectionable medicinal claims had been obliterated from the label and the circulars accompanying the bottles had been destroyed, the court authorized "the distribution of the product to a certain charitable institution in Detroit."—[*Notice of Judgment, 3603.*]

MOUNTAIN VALLEY SPRING WATER

Some "Mountain Valley Spring Water of Arkansas" was shipped in interstate commerce with the following claims appearing on the packages:

"World's best water for kidney and bladder troubles."

"Is Radio-Active Mountain Valley Water."

"A Remedy for Bright's Disease, Diabetes, Cystitis and Rheumatism."

This product was declared misbranded by the federal authorities on the ground that the statements that the water was radio-active and was "a remedy for Bright's Disease, Diabetes, Cystitis and Rheumatism," were false, fraudulent and misleading. The government further declared "said water was not radio-active, and was not a remedy for Bright's disease, diabetes, cystitis and rheumatism." The Mountain Valley Water Company admitted the allegation and judgment of condemnation and forfeiture was entered. The company paid the cost of the proceedings, and after executing a bond in the sum of $500 was permitted to take possession of the water.—[*Notice of Judgment, 3627.*]

STAFFORD MINERAL SPRINGS WATER

Several carboys of a product known as "Stafford Mineral Springs Water" were shipped in interstate commerce by Colburn, Morgan Co., Inc., operating as the Stafford Mineral Springs & Hotel Co., Ltd., Vosburg, Miss. The water bore claims to this effect:

"A remedy for all Kidney Diseases, Bright's Disease, Diabetes, Dyspepsia, Rheumatism, Torpid Liver, Calculi, Insomnia, Nervous Prostration, Etc."

In view of these false and fraudulent claims the government declared the stuff misbranded. Colburn, Morgan Co., Inc., having admitted the allegation, and consented to a decree, judgment of condemnation and forfeiture was entered. It was ordered by the court that after the water had been properly relabeled and the company had paid the cost of the proceedings the product should be delivered to the claimant after bond had been given in conformity with the act.—[*Notices of Judgment, 3648 and 3649.*]

SA-YO MINT JUJUBES

Sa-Yo Mint Jujubes were manufactured by Wallace & Company of New York City. A number of cases having been shipped in interstate commerce, the federal authorities filed a libel for their seizure and condemnation, alleging that the stuff was misbranded under the Food and Drugs Act. Some of the claims made on the trade packages were:

"An Unfailing Relief for Coughs & Throat Irritations."
"Recommended by physicians as a prompt and effective relief for all coughs and bronchial troubles."
"Quickly removes attacks of indigestion."
"Most efficacious in all conditions requiring relief."
"As an effective remedy for coughs and throat irritations they are unequalled."
"Sa-Yo Mint Jujubes cure coughs and throat irritations."

The federal authorities declared that each and every one of the above claims was false and fraudulent. No claimants appeared for the property and the court entered judgment of condemnation and forfeiture and ordered the United States marshal to destroy the product.—[*Notice of Judgment, 3660.*]

HOUCHENS' "FAMILY PHYSICIAN"

The Houchens Medicine Company of Baltimore, Md., shipped in interstate commerce a product called the "Family Physician." Some of the claims made for this preparation were:

"It will positively relieve malaria, scarlet fever, typhoid, bilious and intermittent fevers, coughs, colds, cold on the liver and kidneys, diphtheria and sore throat."
"Also a wonderful and positive remedy for dyspepsia, keeps measles out nicely, regulates the bowels without trouble, and by purifying the blood prevents your liability to disease."

A sample of the product was examined by the Bureau of Chemistry which reported that it was a sirup containing 19.2 per cent. nonvolatile matter, 8.9 per cent. alcohol, anise and a vegetable cathartic drug. The federal officials declared the stuff misbranded in that the claims made were false and fraudulent and "were applied to said article knowingly and in reckless and wanton disregard of their truth or falsity." The Houchens Medicine Company pleaded guilty and were fined $75.—[*Notice of Judgment, 3688.*]

DR. MARTEL'S FEMALE PILLS

Dr. Martel's Female Pills, Knickerbocker Remedy Company of New York, distributors, were sold as "a preparation for disturbances of the menstrual functions." The government declared the drug misbranded "in that the package containing the same bore a certain statement which was false and misleading, and for the further reason that the package containing said drug contained a circular which contained statements regarding the curative or therapeutic effect of said drug which were false and fraudulent."

No one having claimed the property seized by the government, the court entered judgment of condemnation and forfeiture and ordered the United States marshal to destroy the product.—[*Notice of Judgment, 3690.*]

QUICKSTEP, FRYE'S REMEDY

Laura M. Frye of Lynn, Mass., trading as the Frye Remedy Company, shipped in interstate commerce a product called "Quickstep, Frye's Remedy." The preparation contained a number of false, fraudulent and misleading claims on the trade package. Some of these were:

"Cures Rheumatism, Headache, Constipation, Indigestion and Dyspepsia."
"Best Blood Purifier in the World and Leaves no injurious Effects."
"Cures when everything else fails."
"Prevents appendicitis by purifying the blood and keeping the bowels clear and clean."

The stuff was analyzed in the Bureau of Chemistry and the chemists reported that examination showed it to consist of:

Rochelle Salts.....99.81 per cent.
Granulated sugar, colored pink.

As Rochelle salts and pink sugar will not cure rheumatism or prevent appendicitis the federal authorities, very naturally, declared that the stuff was misbranded. Laura M. Frye entered a plea of nolo contendere "and the same was placed on file by the order of the court."—[*Notice of Judgment, 3692.*]

GRAY'S GLYCERINE TONIC

On Aug. 5, 1914, the United States officials filed in the District Court of the United States two libels for the seizure and condemnation of twenty-four cases each containing one dozen bottles of "Gray's Glycerine Tonic Compound." Twelve of these cases had been shipped by the Purdue Frederick Co., manufacturers of Gray's Glycerine Tonic to C. B. Smith and Company, Newark, N. J.; the other twelve cases had been shipped to Roeber and Keubler Company, Newark, N. J. The libel charged that the preparation was misbranded in violation of the Food and Drugs Act, as amended.

Some of the claims made on the labels and circulars around the bottles were:

"It is especially efficient in diseases of the chest and throat and in cases where cod liver oil is not tolerated. In anemia, melancholia, its beneficial effects are noticed almost immediately."
". . . by virtue of the selective restorative influence of its ingredients upon the stomach all the functions of this organ are reestablished; appetite is created, digestive powers are restored, and assimilation of food — to replace waste of flesh and strength — is assured."
". . . an effective, reliable tonic in nervous exhaustion, general debility, impoverished conditions of the blood and nervous system, Bright's disease, diabetes, diseases of the liver, disorders of the urinary organs, etc."
"In tuberculosis of the lungs (consumption) Gray's Glycerine Tonic Comp. is one of the best remedies."
"It always agrees with the stomach and enables the patient to eat, digest and assimilate food; it causes an increase in flesh and strength."
"It is unequalled as a tonic for the vocal organs. It 'clears the throat' and renders the voice clear and resonant. It is endorsed and used by leading singers and speakers."
"Dyspepsia manifested by loss of appetite, inability to digest food, uneasiness and distress after eating, nausea, belching, water-brash, heartburn, vomiting, etc.; it promptly relieves these symptoms and effects a complete cure."

These are by no means all of the absurd claims made for this nostrum as set forth in the government bulletin; they are, however, typical. The federal authorities declared the stuff misbranded on the ground that, as Gray's Glycerine Tonic "did not have the curative and therapeutic effect claimed," the statements made on the label and circulars "were false, fraudulent and misleading."

On Oct. 19, 1914, the two claimants, C. B. Smith & Co., and Roeber & Keubler Co., having consented to a decree, judgment of condemnation and forfeiture was entered, and the court ordered that the product should be delivered to claimants on their payment of the costs of the proceedings, after each had given a bond in the sum of $250.—(*Notices of Judgment, 3680 and 3681.*)

Rural Health and the Nostrum Evil.—The patent nostrum evil is more difficult. In many instances, it is a habit, unconscious it may be, but nevertheless a habit. The man or the woman accustomed to the effect of a "dope" drink wants to believe that it is relieving pain or assisting nature. The pleasant sensation is an incident which lightens the routine of a dull, monotonous day. I see no way to put out of business these partners with poverty and death but to enlist in the cause the country editor. If he could be persuaded or made to cut out the advertisements of quack remedies and paid to run a half column each week of pertinent, reliable information on the so-called remedies most used in his territory, it would be effective to a degree. . . . The control, however, of use of patent medicines is largely in the power of the practitioner. He is the main factor in the education of the people as to harmful results and folly of spending money for these concoctions of alcohol, burnt sugar and other substances with no therapeutic value.—Oscar Dowling, *American Journal of Public Health*, May, 1915.

Correspondence

Shall Progress in Medical Education be Arrested?

To the Editor:—The contention of Dr. Rodman in his presidential address at San Francisco (The Journal, June 26, 1915, p. 2107) that the medical schools of the United States have advanced their standards too rapidly, and should now "mark time," ought not to go unchallenged. It seems strangely anomalous that such a plea should come from the President of an Association which has stood since its inception for progress in medical education. It is unfortunate, because it may serve as an excuse for some of the laggard schools to defer the much to be desired, and soon to be inevitable advance in their requirements for admission. Fortunately, with thirty-nine medical colleges now demanding two years of premedical work in college, while in nine states no applicant for licensure to practice is eligible unless he presents evidence that he has had at least this amount of preparation, the forward movement has gained too much momentum to be long arrested.

Dr. Rodman is in error when he states that "the present standard of the Council (four years in an accredited high school, one year in the basic sciences of chemistry, physics and biology) is on a parity with that of Canada and Great Britain and with European countries." In Germany the standard is distinctly higher. Graduation from the German gymnasium secures an education—a mental training—fully equal to that obtained at the end of the sophomore year in the best American colleges. After completing the gymnasium course, the student spends six years in medical study. In the Scandinavian countries the requirements are still higher. The admission standards in Great Britain are not at all uniform, and are, according to Dr. Flexner, not satisfactory nor such as should be emulated by our own schools.

Dr. Rodman says that "medicine is not a thing apart but only a link in the educational chain, and should be based upon and correlated with the secondary schools, colleges and universities of the country." But the plan which Dr. Rodman advocates for the premedical year must have the effect, if, indeed, it be not its purpose, to eliminate the college entirely from the scheme of medical education. We cannot afford to dispense with the college. Whatever the shortcomings of the American college may have been, it is the crowning feature of our educational system; it affords a kind of preparation for professional vocations, and especially for medicine, which no other institution can offer. Two years of such work constitutes by no means the ideal preparation for medicine; every student whose age and other circumstances permit should spend three and, if possible, four years in premedical college work. One of the chief advantages of insisting that the premedical science work shall be taken in a college or university, and not in a high school or medical college, is the fact that it gets every prospective medical student into the atmosphere of the college, and once there, he is apt to prolong his residence and secure a broader, more thorough preparation for his future work than is afforded by the minimum requirement of the medical school.

Of course, such a plan reduces the possible clientele of the medical schools greatly because less than 15 per cent. of high school graduates, at the present time, ever go to college.

It is this fact, more than any other, which impels some of our medical schools to resist any movement which will compel *all* medical students to take some premedical college work. It has resulted (in every school which has adopted this requirement) in a reduction of the number of students of from 50 to 90 per cent. Few of these schools, however, were financially any better able to stand this reduction in number of students and in income, than the schools which have lagged behind and have resisted every step in the forward movement which has been taken. So far as the medical profession and the public are concerned, there is no need to fear any dearth of medical students and physicians for many years to come.

The notion that *adequate* preparation in physics, chemistry, biology and modern language can be secured in the high school, either now or in the near future, is an idle dream. Less than half a score of the 13,000 high schools in the United States have made any attempt to extend the high school work to six years, corresponding to the completion of the sophomore year in college. The difficulty which has been experienced in many states in advancing the high school course from three to four years, and in maintaining a satisfactory standard of instruction in the face of the opposition of complaining taxpayers, discourages any hope that we shall see five or six year high schools anywhere outside of a few large cities, for many years to come. There is justice in the demand that before the high school shall add expensive fifth and sixth years for the few students who might desire to attend them, any available funds shall be spent in making the earlier years in the high school and in the grades more effective.

It is very probable that one or two years may be saved to the average student, by a rearrangement of the curriculum Such an experiment has been made by the University of Chicago High School with apparent success. It is certain, however, to be some years yet before this plan becomes generally adopted. Meanwhile, the student preparing for medicine must secure adequate preparation in the fundamental sciences, even though such a course ushers him into medical practice a year or two later than we might desire.

As between the choice of inadequate preparation and graduation at 25, or a thorough grounding in these fundamental sciences and graduation a year later, there can be no room for question. Under existing conditions there is no reason why the average American boy should not graduate from the high school at 17 or 18, take two or three years of premedical college work, five years in medical school and hospital and enter into the practice of medicine at the age of from 25 to 27. Furthermore, there never has been a time when it was easier than it is now for the poor boy to put himself through college.

The attempt of the detached medical school to provide a submedical year in physics, chemistry and biology is by far the most unsatisfactory solution of the problem. It has been aptly designated by President Pritchett as "a parasite on our educational system."

After all, the individual most concerned in this matter is the student himself. I have had occasion to interview many earnest and ambitious medical students, who, ignorant of the importance of adequate premedical education, badly advised and seduced into a low grade medical college, have discovered the mistake they had made, and were seeking admission to some medical school with higher standards. The amendment of their deficiencies involved in such a transfer meant, at that late stage in their career, an expense in time and money which often seemed to them almost insurmountable. What some of these students had to say about their advisers would not look well in print.

One of the great needs in this country is a universal dissemination among young men and women who are planning to go into medicine of all the facts in reference to medical education and medical schools, which will enable them to choose wisely, and this the Council on Medical Education is undertaking to do. Every student who enters a lower grade medical school should do so with his eyes open.

No such school has a moral right to receive a student without the assurance that he knows the facts in the case. He should know that the "ideal plan" of the Council on Medical Education, proposed as such eleven years ago, when the Council thought, rightly no doubt, that too rapid an advance would antagonize a great many of the medical colleges, is no longer an "ideal" scheme. No curriculum which fails to qualify those students who have pursued it to practice in several states, can in any proper meaning of the word, be designated as "ideal."

If Dr. Rodman is really content to have the school with which he is connected continue a standard of admission

comprising only one year of premedical work beyond the four year high school course, will he undertake to see that there is printed in bold type, in a conspicuous place in the annual announcement of the college, and in all of its advertisements, some such legend as this: "Thirty-nine other medical schools require more adequate preparation for entrance, and therefore insure to their students a better preparation for the study and practice of medicine. Nine states—Alabama, Colorado, Indiana, Iowa, Minnesota, New Hampshire, New Jersey, North Dakota and South Dakota, refuse to license physicians—graduating after 1915 to 1919, who had less than two years of premedical college work. Graduates of this Medical College are therefore not eligible to practice in these states"?

Will Dr. Rodman further use his influence to see that every other medical school requiring only one year of college premedical work posts a similar notice?

JOHN M. DODSON, M.D., Chicago.

Phosphorated Oil

To the Editor:—In reading the special article on "Practical Pharmacology" (THE JOURNAL, July 3, 1915, p. 28), it occurred to me that others may have experienced the same difficulty that I have with the filling of the prescription there recorded:

Phosphorus	0.01 gm.	⅙ grain
Cod liver oil	to make 100 gm.	3 fluidounces

Free the oil of contained air by heating to 150 C., and allow to cool, then add the phosphorus . . . warm to about 80 C. and shake until the phosphorus is entirely dissolved.

This is a remedy of high repute in rickets, and being therefore commonly used for little children and so potent a drug, the accuracy of dosage is of first importance. Phosphorus must be weighed under water, and one-sixth grain so required does not meet a cheerful response from the druggist. I have therefore joined the safety first movement, using the 1 per cent. oil of the National Formulary, and write the prescription as follows:

Phosphorated oil	1.
Cod liver oil	100.

This gives the same composition and greater assurance of accuracy in the majority of cases.

I believe the safety to the patient, convenience to the dispenser and resultant comfort to the prescriber justify the suggestion submitted. A. E. HEDRICK, M.D., Minneapolis.

[COMMENT.—The suggestion is interesting. It carries with it, however, the danger that an old, and hence worthless phosphorated oil may be dispensed.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

A DEFINITION OF "ANAPHYLAXIS"

To the Editor:—Please give me the generally accepted definition of the word "anaphylaxis." It seems to me that different authors, who contribute to THE JOURNAL, have different conceptions of its meaning. Has the meaning of the word changed since it first came into existence? F. E. B., M.D., Wilmington, Va.

ANSWER.—By the word "anaphylaxis" is understood generally the more severe phenomena that appear when an animal previously influenced ("sensitized") by a foreign protein, introduced into the blood and tissues by injection or otherwise, after a suitable interval again receives the same protein into its blood and tissues as the result of injection or otherwise. Anaphylactic shock in the guinea-pig is the classical example. As these phenomena are regarded currently as the result of an intoxication with the products of protein splitting, anaphylaxis may be looked on as a protein intoxication occurring when a prepared animal receives the proper protein into its system.

At first the word anaphylaxis was used to describe the condition in which severe, violent phenomena occur on reintroduction of toxic proteins (eel serum, actinea poison) in animals previously injected with these substances for purposes of immunization. This was contrary to expectation; the previous injections, it had been assumed, would produce a condition of protection, a prophylaxis; as the directly opposite action resulted, the word anaphylaxis, meaning the reverse of prophylaxis, was coined to designate the condition. Before long, hypersusceptibility was introduced as synonymous with anaphylaxis. As a clearer insight into the nature of the condition was gained, especially through the work of von Pirquet on serum disease in man, it developed that in reality it does not concern the reverse of prophylaxis or hypersusceptibility to poisonous substances, but a change in the powers of the body to react on the introduction of foreign proteins. In order to indicate the nature of this conception, von Pirquet coined the word "allergy," which means altered reactivity. At present there is general agreement that phenomena as different as the experimental anaphylactic shock in guinea-pigs, the various manifestations, mild and severe, of serum disease in man, various "food idiosyncrasies," such as egg asthma, poisoning by cow's milk, etc., and the tuberculin and similar reactions are all due to an altered reactivity of the body, altered by previous influence of the foreign proteins concerned on the antibody-producing tissues so that when the conditions are right the foreign proteins are broken up in such a way as to produce poisonous effects that manifest themselves in different ways, depending on quantitative and other relations. Hence the word "allergy" would appear to be the best word we have for the condition because there is in reality no increased susceptibility to any particular poisons, nor is it true that the reverse of prophylaxis exists, because the allergic (anaphylactic) phenomena are the result of reactions between antibody and antigen, incidents, so to speak, in the course of immunization. Accordingly, anaphylaxis, hypersusceptibility and allergy are being used more and more as synonymous terms, anaphylaxis being applied perhaps more to the severer general symptoms, of which anaphylactic shock is the classical example, and allergy to the milder phenomena illustrated by ordinary serum disease, tuberculin reactions, gonococcal reactions, etc. From what has been said, we see that anaphylaxis, although applied to the same sort of phenomena as when introduced by Richet, no longer has the interpretative significance of its derivation and first usage.

DENATURED ALCOHOL NOT PERMISSIBLE FOR MEDICINAL USES

To the Editor:—1. Is it permissible to use denatured alcohol in the preparation of tincture of iodin to be used as a skin disinfectant in operations?

2. Is denatured alcohol toxic when used as an alcohol rub?

3. Are there any laws governing the use of the various alcohols?

4. My conception of the various alcohols is the following: Commercial alcohol is 98 per cent. ethyl alcohol or grain alcohol. Denatured alcohol is derived from commercial or ethyl alcohol. Wood alcohol is methyl alcohol, a poisonous product, unfit to be used not only internally, but also externally. EDWARD H. MCINTYRE, M.D., Virginia, Minn.

ANSWER.—1. Tincture of iodin prepared with denatured alcohol would not conform to the requirements of the federal Food and Drugs Act or to the legal requirements of most states. Since ethyl alcohol is denatured for ordinary commercial purposes by the addition of methyl alcohol, tincture of iodin prepared with such denatured alcohol would probably be unsafe for use on or near open wounds.

2. While the chances of serious toxic results from the use of ordinary denatured alcohol for massage are probably not great, it is better to avoid such chances altogether by the use of pure ethyl alcohol.

3. The status of alcohol in drugs is defined by Regulation 28-a, issued by the Department of Agriculture for the enforcement of the Food and Drugs Act, June 30, 1906, as follows:

The term alcohol is defined to mean common or ethyl alcohol. No other kind of alcohol is permissible in the manufacture of drugs except as specified in the United States Pharmacopeia or National Formulary.

Neither denatured alcohol nor wood alcohol is recognized in the U. S. Pharmacopeia or National Formulary.

Some states—New York, for instance—forbid the use of methyl alcohol in all medicines except veterinary liniments. It should be noted, by the way, that, although the U. S. commissioner of internal revenue has approved a number of special formulas for denaturing alcohol for antiseptic

purposes with other substances than methyl alcohol, such formulas may not be employed except by hospitals or sanatoriums which have been licensed to use them, and the product may not be used for ordinary medicinal purposes.

4. Your conception of the various alcohols is essentially correct, except that commercial alcohol usually contains only about 95 per cent. by volume of absolute ethyl alcohol.

USE OF RED CROSS

To the Editor:—What is the distinguishing mark of a physician's automobile, a red or a green cross? Is it not a fact that the American National Red Cross Society has objected to the use of the red cross on the automobiles of physicians who are not members of the society? What is meant by the St. Andrew's green cross, and why should that typify a physician's car? J. L. SIMS, JR., M.D., Weleetka, Okla.

To the Editor:—Recently I wrote to a firm, advertising in THE JOURNAL, regarding an emblem for the radiator of my car, and in return, they sent me two designs, one a red cross and the other a green St. Andrew's cross. Will you please tell me which, if either, is official, and which one you recommend? I had supposed that the red cross was used with authority only by the American National Red Cross, but I am unable to find any reference connecting the green St. Andrew's cross with the medical profession. FRANK P. GOODWIN, M.D., Jamestown, N. Y.

ANSWER.—There is no mark which has been universally decided on as distinctive of a physician's automobile. A number of hospitals and physicians have taken the green cross, formed of five squares, sometimes called the Geneva cross, as their insignia. Generally speaking, the red cross should not be used as a distinguishing mark even by physicians who are members of the American Red Cross. This insignia was created to designate relief in time of war or in time of great disasters. Under war conditions it cannot be used as a brassard, or on vehicles near the front without the consent of the War Department. The Treaty of Geneva, which the United States has signed with other countries, compels protection of the insignia, because its misuse leads to nullification of its protection. Certain manufacturers secured the use of the red cross as a trademark previous to 1905, and it has been impossible to do away with these special cases.

TINCTURE OF IODIN AND MERCURY IN DISEASES OF THE SKIN

To the Editor:—1. Are tincture of iodin and mercury in combination ever used as a local application in diseases of the skin?

2. Are tincture of iodin and mercury incompatible?

3. If so, in the following instance would they be considered incompatible, and what would be the injurious result, if any, of their incompatibility: An area of tinea circinata having first an application of tincture of iodin followed by an application of an ointment of mercury or an ointment of ammoniated mercury? E. R. C., Shakopee, Minn.

ANSWER.—1. Stelwagon (Diseases of the Skin, Ed. 7, 1914, p. 1135) states that in obstinate cases of ringworm he used among other measures tincture of iodin containing from 1 to 3 grains of mercuric iodid to the ounce.

2. Trituration of solid iodin with metallic mercury results in the formation of iodid of mercury, mercuric iodid being the result if the iodin is in excess, while mercurous iodid is produced when the mercury is in excess. No doubt a similar reaction will take place when tincture of iodin is brought in contact with mercury.

3. While the fat of the ointment may retard the reaction to a greater or less extent, it is probable that in both cases iodid of mercury will be produced. The effect will be the same as the original employment of a preparation of iodid of mercury.

ANIMAL IMMUNITY TO SYPHILIS

To the Editor:—Is there any animal known that is immune to syphilis, or that, on attempts to infect, has not contracted syphilis?

AMOS T. FISHER, M.D., St. Joseph, Mo.

ANSWER.—Although most lower animals possess some degree of natural immunity against syphilitic infection, there is no experimental evidence at hand indicating that any animal is entirely immune. Careful inoculation experiments have been conducted by one or more investigators on many animals including the dog, cat, monkey, pig, rabbit, sheep and guinea-pig, and in all these animals some form of syphilis has been produced. Metchnikoff and Roux, however, and others have demonstrated that certain species of apes (mandrills and maimons) are so highly resistant to infection with syphilitic material that, in rare instances in which inoculation has been successful, all evidence of the disease disappeared with the healing of the primary lesion.

Medical Education and State Boards of Registration

Higher Standards Adopted

Official announcements just received state that beginning in 1916 three more medical colleges will require two years of collegiate work, including courses in physics, chemistry and biology, in addition to a four year high school course. These colleges are the College of Physicians and Surgeons, Medical Department of the University of Southern California, Los Angeles; the Boston University, School of Medicine, Boston, and the Medical College of the State of South Carolina, Charleston. This makes a total of forty-five medical colleges which are now requiring or have adopted this higher entrance standard. There are nine states in which the licensing boards are now enforcing or have adopted two years of collegiate work as the minimum standard of preliminary education. These states and the years when the requirements became or will become effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Applicants
Alabama	2	1915-16	1919
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
North Dakota	2	1908-09	1912
South Dakota	2	1911-12	1915

Rules Governing Clinical Work

The following are the recommendations for the conduct of clinical work in the College of Medicine, University of Iowa, which were adopted at the meeting of the Iowa State Board of Education, June 16, 1915:

1. That the privilege of both private and clinical wards be limited to the staff of the University Hospital.

2. That the hospital staff shall consist of the following departments:

(1) General Medicine, including Neurology and Psychiatry.
(2) Dermatology.
(3) Pediatrics and contagious diseases, including the care of medical children 12 years of age and under, and contagious diseases such as usually affect children of all ages.
(4) General Surgery, including Orthopedic and Male Genito-Urinary Surgery.
(5) Gynecology and Obstetrics.
(6) Ophthalmology, Oto-Laryngology and Oral Surgery.

3. The above division of work is in no way to interfere with the proper care of any patient in the University Hospital.

4. That this division of service holds for both clinical and private cases, except that the head of the Department of Gynecology may include in his private work in the hospital the surgery of the female abdomen.

5. That the assistants in the various clinical departments shall be nominated by the heads of the respective departments to the faculty and the dean for their approval before being recommended for appointment to the Iowa State Board of Education.

6. That all clinical teachers in the College of Medicine confine themselves in their private work as well as in their clinical practice to their specialty as indicated by the subjects taught, in so far as this is practical.

7. Only individuals who are willing to make private practice wholly secondary to teaching are to be members of the clinical teaching force. The chiefs and assistants must be individuals who have as their main object teaching. An extensive, time-consuming private practice is not permissible.

8. Every person connected with the clinical teaching must spend on an average of three hours per day during the college year in the University Hospital. It is assumed that not

only will the necessary teaching work and the care of the patients be carried out, but that the work will be completed from a scientific standpoint.

9. When there is a question of sufficient room in the University Hospital clinical patients shall always have precedence. When the head of a department considers it advisable any private case which would naturally belong to his department may be used for clinical teaching.

Medicolegal

Rules as to Courts Ordering Physical Examinations—Proper Case for Refusal

(Kokomo, Marion & Western Traction Co. vs. Walsh (Ind.) 108 N. E. R. 19)

The Appellate Court of Indiana, Division No. 1, in affirming a judgment in favor of plaintiff Walsh for $2,500 damages for personal injuries received by her while a passenger on one of the defendant's cars, holds that there was no error in the trial court overruling the defendant's motion to appoint three physicians named to make a physical examination of the plaintiff. The court says that the record showed that the defendant, before the trial, requested an order for an examination of the plaintiff's injuries, and that pursuant to such request the trial court granted the order and appointed two reputable physicians to make the examination. During the progress of the examination, the physicians discovered that the plaintiff was a virgin, and they informed her and her mother that a further internal examination would require them to rupture the hymen. According to the affidavit of one of the physicians, the plaintiff and her mother then refused to allow them to rupture or break the hymen, and for that reason they did not proceed further with their examination. However, on this question the examining physician was contradicted by the plaintiff, her mother, and by another physician, who were present at the examination, they all swearing, in effect, that when the examining physicians discovered the condition of the hymen they declined to make any further examination for the reason that they did not desire to rupture it, and that neither the plaintiff nor her mother refused to permit such examination. It was not claimed by the examining physicians that they asked to make an examination with the virgin speculum and sound, or that they had such instruments with them. The court is of the opinion that the examination suggested after this, being one which would destroy the seal of the plaintiff's virginity and would cause pain and a flow of blood, it afforded justification for the plaintiff's refusal to submit to it. An examination which involves serious pain should not be ordered. As to the plaintiff not having advised the defendant that she had submitted to an internal physical examination by her physician in which a virgin speculum and sound was used, the answer is that she was under no obligation to furnish the defendant with information. The power of the court to grant an order requiring an examination of the plaintiff in such cases is based on the supposition that without its exercise injustice may be done the defendant. The court, however, in the exercise of such power should not look to the rights of the defendant alone. The age and sex of the person who is the subject of the examination, and the nature and character of the examination involved, will all be considered by the appellate tribunal in determining whether the trial court has abused its discretion in a given case. To say that an examination should be ordered in every case would be to give to the defendant in such cases a weapon which might be used to defeat justice rather than to prevent injustice to itself. The subject of the examination in the instant case, her age, and the character of the examination involved could not be ignored by this court in determining whether the trial court abused its discretion in refusing to order such examination. Whether these facts alone would warrant the ruling made this court need not, and does not, decide, because such ruling was not required to rest on such facts alone. The motion on which such ruling was based was a second application or motion, and in the absence of a showing of the necessity for, or good reason for a second examination it was properly refused. Furthermore, it has been held that a request for an examination by physicians selected by the defendant alone was properly refused. And in some jurisdictions the courts have held that three physicians is an unreasonable number to demand for such an examination.

Roentgenograms and Physicians' Records as Evidence

(Grifith vs. American Coal Co. (W. Va.), 84 S. E. R. 621)

The Supreme Court of Appeals of West Virginia holds, in this personal injury case, that Roentgen-ray, roentgenographic or shadow pictures are admissible in evidence when shown to have been made with trustworthy instruments, and properly taken, in connection with the evidence of witnesses expert in the use of such instruments and skilled in making, reading and interpreting such pictures. Where other expert physicians undertake to interpret the picture differently from the maker thereof, giving evidence of the external appearances of the plaintiff's body and the physical tests to which they subjected him, tending to contradict the maker of the roentgenogram, these conflicts are all for the jury to weigh and consider in reaching their verdict. The court also holds that, there being a dispute as to the age of the plaintiff, the account books or other books of the practicing physician or surgeon who attended the mother at the birth of her child, containing entries regularly made in due course of business, and the oral evidence of such practitioner verifying such record, were legal and competent evidence to go to the jury on the question of the date of the birth of the child. The evidence of the physician, and his book of entries, shown to have been a book of original entries, constituted under the authorities original and primary evidence. Such record entries, proved by the living entrant, constitutes not only legal evidence, but also evidence of a very high class when proved to have been contemporaneous with the transaction and there could have been no motive to misrepresent.

Physicians Appointed by Courts to Make Physical Examinations

(Gentry vs. Gulf & Ship Island Railroad Co. (Miss.), 67 So. R. 849)

The Supreme Court of Mississippi, in reversing a judgment rendered for the defendant in this personal injury case, says that, on application of the defendant, the trial court appointed two physicians to examine the plaintiff. The plaintiff was compelled to submit to a physical examination by the court's physicians. When these physicians were on the stand, testifying for the defendant against the plaintiff, it was made known to the jury that they were chosen representatives of the judge of the court. This was done over the objection of the plaintiff. It is quite clear to the Supreme Court that the quality of the testimony given by these experts was thus much magnified and unduly impressed on the minds of the jury. And this is one of the reasons why courts are denied the power to appoint expert witnesses and compel persons to submit their bodies to their inspection. The Supreme Court cannot admit that physicians, or other experts, appointed by a court at the request of a party to a lawsuit, are more reliable and more disinterested than are others of like attainments and professional standing, simply because the others have given expert testimony at the request of a party to the suit. There is nothing in the education and training of a judge that peculiarly qualifies him to discriminate in the selection of medical experts, and yet there is little room to doubt that the ordinary juror would give undue weight to the judge's nominee. In a recent case, this court has held that the trial judge is without power to appoint physicians and require parties to a suit to submit their bodies to the inspection of the physicians designated by the court. It was error for the trial court to assume this power in this case.

Society Proceedings

AMERICAN ASSOCIATION OF IMMUNOLOGISTS

Second Annual Meeting, held at Washington, D. C., May 10, 1915

The President, DR. GERALD W. WEBB, Colorado Springs, in the Chair

Election of Officers

The following officers were elected: president, Dr. J. W. Jobling, New York; vice presidents, Drs. George P. Sanborn and W. T. Councilman, Boston, and John A. Kolmer, Philadelphia; treasurer, Dr. Willard J. Stone, Toledo, Ohio; secretary, Dr. Martin J. Synnott, Montclair, N. J.

Value of Vaccines in Certain Diseases of the Ear

DR. GEORGE M. COATES, Philadelphia: Successful vaccine therapy does not consist in buying a bottle of mixed vaccines and giving hypodermics according to the label on the bottle. A stock vaccine may be used in cases in which an autogenous product cannot be obtained, as for prophylaxis. For immunization against acute rhinitis, in which a variety of organisms are usually found, a mixture of all these organisms is selected, and three or four injections given at three or four day intervals, the dosage depending somewhat on the individual, the age, the size, etc. Whatever the initial dose, it is usually doubled for each succeeding dose, unless there is too marked a local or general reaction. This should insure the ordinary person against an attack for some months, but in very susceptible individuals the entire course may have to be repeated. The treatment of acute rhinitis is exactly the same as for prophylaxis, except that it is pushed more vigorously and continued until the trouble has been conquered. Following the first dose, and this is true of all the conditions considered, there will probably be some exacerbation of the patient's condition, with increased discharge which soon clears up in favorable cases. This reaction is considered a favorable omen. In chronic rhinitis the treatment must be extended and the patient watched lest he be overtreated. Suppurations of the accessory nasal sinuses are not much relieved by vaccine therapy until adequate drainage has been secured, and in chronic sinusitis it is usually necessary to enlarge the normal ostium or make an artificial opening before much can be expected from these vaccines. In acute cases the results are good for the most part, and a stock suspension may be used in order to get quick results, at least until an autogenous one can be prepared. Recurrent furuncles about the alae nasi and alar cartilages, usually caused by one of the staphylococcus group, yielded in a most satisfactory manner to vaccine treatment. In atrophic rhinitis and hay fever the results are not particularly gratifying.

The treatment of diseases of the ear by bacterins has yielded surprisingly good results. In chronic catarrhal deafness and in acute suppurative otitis media of scarlatinal origin, most satisfactory results have been shown. During the past year we have made autogenous vaccines for about forty-two chronic cases of suppurative otitis media at the Pennsylvania and Polyclinic hospitals, and so far we have obtained dry ears in about 40 per cent. of the cases. These were selected cases which had resisted all the usual methods of treatment. There are many factors which militate against the potency of a vaccine, and in nose and throat work a frequent cause of error is in taking the culture. The external canal, membrana tympani and middle ear should be cleansed thoroughly by means of suction apparatus and cotton swabs. Alcohol and mercuric chlorid are then rubbed as far back as the drum to sterilize the external canal. By inflation through the eustachian tube or by suction to the external meatus, pus is forced from the recesses of the attic. The culture is then taken with a platinum loop or a very small amount of cotton on an applicator thoroughly sterilized.

DISCUSSION

DR. FREDERICK SONDERN, New York: I agree with what Dr. Coates said regarding the use of autogenous vaccines. I have seen good results follow their use. In ear cases, the successful outcome following the use of vaccines depends on the condition of the ear. If there is dead bone present, you will not get the desired results. This also applies to the use of vaccines in sinus disease and inflammations of the mucous membrane of the nose. I have seen very gratifying results following the use of the vaccines, but if the nose is so occluded that the patient cannot draw air through, especially if there is a sinus obstruction with pus present, the employment of the vaccines is useless.

DR. A. PARKER HITCHENS, Glenolden, Pa.: I have had a limited experience in the treatment of hay fever, but I have used the pollen extract in both the treatment and prevention of this disease. Just what the pollen extract does remains to be explained. If you give the specific pollen or protein, a dose is usually followed by a relief of the symptoms in nearly every case. The majority of the cases of hay fever are undoubtedly due to certain pollens. In the fall we meet with the ragweed; in the spring, orchard grass and red top are chiefly responsible. I had one patient with hay fever which probably resulted from proximity to magnolia trees. During the first year I treated him with injections every seven days, but I soon noticed that he began to have symptoms at the end of the fifth day. I then shortened the time of the injections to five days, and the patient then had no more symptoms. The rational treatment for the prevention of hay fever should be preceded first by the diagnostic test. However, the experience of many men with the ophthalmic reaction as used in tuberculosis will cause them to hesitate using this method in the eye, and I do not really think it is at all necessary to use the eye as a test. The intradermal test gives as good indications as the ophthalmic reaction. I have under my care a young woman afflicted with asthma. Following the use of small doses of autogenous vaccines once a week, the asthma disappeared. One of the most important points brought out by Dr. Coates was that the bacterial vaccine must be used with brains. No good can come from the use of the vaccines unless the antibodies formed come in contact with the bacterial factor. Every practicing physician should take this into account. I have given about 1,500 injections and have never had the slightest cause for alarm. Vaccines are valuable before operations for infections of the upper respiratory tract.

DR. E. C. L. MILLER, Richmond, Va.: Certain observations make it appear as though hay fever caused an anaphylactic reaction. After the injection of protein, the patient appears to be desensitized and more or less stimulated. If we continually inject patients with the same antigen, does this not increase the trouble?

DR. GERALD B. WEBB, Colorado Springs: It is a reproach to the medical profession that it has never dealt with the so-called "common colds." I believe that all of them have seen benefit result from the plan outlined by Dr. Coates. Perhaps the colds are not all caused by the organisms they thought they were. In London many cases of so-called colds were found to be due to pseudodiphtheria. It is well known that in Colorado influenza came in waves, yet we have not encountered the influenza bacillus in five years; but during this time we have seen cases that appeared to be grip, but there were no influenza bacilli present. Hay fever patients are susceptible to more than one pollen. Cottonwood causes the trouble in some cases. In the treatment we employ, we sometimes combine the catarrhal organism with the pollen vaccine, and in half the cases so far treated successful results followed.

DR. GEORGE MORRISON COATES, Philadelphia: Colds that are treated last about ten days; if untreated, they last probably eleven days. In all my operations for mastoiditis, cultures are always taken and vaccines administered regularly after the operation, and my patients seem to get well in a shorter period of time. McKernon of New York, in cases of mastoiditis following scarlet fever or measles, uses the

autogenous vaccines, and he believes that this reduces the time of healing to a considerable extent. In ear cases, the results of Nagel's work brought about much skepticism, but his work can be vouched for. In certain ear cases of the chronic type, even when necrosis is present, we can raise an artificial immunity and terminate the necrosis.

Pseudopositive Wassermann Reaction in a Case of Uremia and Intestinal Toxemia

DR. JUDSON DALAND, Philadelphia: My patient was a man, aged 55, whose illness began Jan. 16, 1911, when he felt as though a nail had been driven into his left knee, and a few minutes later swelling was observed in the feet and knees, rapidly involving the legs; this was soon followed by ascites. The physical examination showed extreme pallor, poor musculature, cyanosis and a few enlarged glands in the neck, axilla and groin. The pupils contracted equally and responded normally to stimuli. The teeth were absent. The apex of the heart was half an inch to the left of the nipple, and the impulse was heaving. The area of heart dulness was increased more especially to the left. The pulse was regular in force and rhythm, compressed with difficulty, and the radial arteries were sclerosed. The first sound was rough and accompanied by a blowing systolic murmur, transmitted to the left axilla. A similar murmur was heard over the aortic cartilage, and was transmitted to the neck. The aortic sound was accentuated. The liver was slightly enlarged. The diagnosis was chronic interstitial nephritis and uremia in association with intestinal toxemia. Four Wassermann tests taken at intervals during the two weeks following the patient's admission to the hospital showed one three plus Wassermann, two positive and one plus-minus reaction, this being the last of the four. The urine showed a moderate amount of albumin with hyaline and granular casts and a large amount of indican.

DISCUSSION

DR. JOHN A. KOLMER, Philadelphia: The other side of the question as to the specificity of the Wassermann reaction needs some defense. I have been interested in the question of the antigens, especially with the cholesterated extract, for several years, and I have followed many patients through the clinical course of the disease and made comparisons with the aid of several clinicians as to the Wassermann findings. I am of the opinion that this reaction is primarily due to a difference in the antigen. I do not believe that the alcoholic extract of a syphilitic liver is a specific antigen. This applies too as regards the aqueous extract of rabbits' livers. The antibody is a large part, or constituent, of the Wassermann test. For three or four years we used three different extracts; one to be reinforced with cholesterin; another, the alcoholic extract of syphilitic livers as used in the United States and in Germany, and an acetone which was insoluble, the extract prepared after the method of Noguchi. We found that the highest percentage of reactions was obtained when we followed the method of Dr. Uhle. The use of the alcoholic extracts of syphilitic livers yields the poorest results. Syphilis should be diagnosed in the laboratory. The statement that the patient did not have syphilis does not exclude this disease; many of these patients have their symptoms cleared up when under antisyphilitic treatment, which makes it presumably evident that the patient suffered from a true case of syphilis.

DR. J. J. KENYOUN, Washington, D. C.: I agree with what has been said regarding the specificity of the Wassermann reaction and the importance of reinforcing it with antigen. I believe that the discrepancies found in the laboratory are due to the fact that different antigens are used. The Wassermann reaction is much modified in those who partake of alcohol in considerable quantities.

DR. E. B. VEDDER, Washington, D. C.: I am in accord with what has been stated by Dr. Kolmer and especially that a diagnosis should not always be made on a positive Wassermann alone. Lesions of syphilis may occur without any history of the disease and without clinical signs being manifested. There are, I believe, a certain number of cases of syphilis that can be diagnosed only by the Wassermann test. With regard to the normal case in which the reaction varied from 0 to 10 per cent., I have just completed a series of surveys. Among 1,500 soldiers about 3 per cent. yielded a positive Wassermann.

DR. RICHARD DEXTER, Cleveland: I agree with Dr. Kolmer that antigens are a variable factor. The result of his observation showed that the cholesterin antigen gives a finer test than does others.

DR. JUDSON DALAND, Philadelphia: If I obtain a positive Wassermann reaction, it does not mean that the individual has syphilis; if I get a negative result, it does not necessarily mean that the individual does not have syphilis.

DR. A. A. UHLE, Glenolden, Pa.: Serologists wish to obviate the causes which give rise to a positive reaction. The workers in this field as yet have no specific antigen which they can rely on. In obscure cases of syphilis the use of an antigen is of great diagnostic value. What does it mean, sending samples from the same individual, the blood taken under similar conditions, to ten different laboratories and getting returns that, for instance, six were positive and four negative? In studying these cases it becomes clear that the discrepancies in the Wassermann reports, made by different serologists, were due to errors in technic, or to lack of proper standardization of the reagents. We should watch with care the work of the different workers in the laboratories and determine who does the best work and then rely on his interpretations. I recall one worker who was sent 103 specimens, and he did not fail once in making a proper interpretation.

A Study of Blood Counts in Relation to Vaccine Therapy; Autoinoculation in the Treatment of Mouth Infections

DR. JOSEPH HEAD, Philadelphia: We have found blood counts of value in the use of vaccines in that they have taught us to be more moderate in our dosage, and we have found that patients respond at least as well, if not better, when the doses are pushed to the point of getting marked reactions. I might cite a number of cases in which unquestionable injury might have resulted from excessive dosage with vaccines had it not been for the blood count. Lymphocytosis does not seem to be as much of a factor as I thought last year. With reference to the ameba, I have been using emetin (alkaloid), one-third grain, administered hypodermically in the arm or back, for ten successive days during the treatment. It is a great help to the vaccine treatment of mouth infections. However, we have had remarkably good results in cases in which the vaccines were used without emetin. As a real specific for pyorrhea, I recommend the autoinoculation produced by the use of floss silk and tooth brush. The usual methods of brushing the teeth are palpably defective. The brushes in common use are improperly constructed. They should be smaller and the bristles shorter if the real bristle friction is to be obtained. Another error is the impression that brushing the gums causes them to recede; they should be brushed vigorously. An effective method of cleansing the teeth is first, that the spaces between the teeth should be swept with dental floss so that all bacterial masses will be removed from the sides of the teeth and gums. This will at first cause bleeding and make the interdental spaces sore. If the infection has not spread beneath the gums beyond the reach of the floss silk, autoinoculation will soon cause a healing that is little short of miraculous. After using the floss, the short flat bristled brush should be used.

DISCUSSION

DR. C. C. BASS, New Orleans: The subject of pyorrhea alveolaris has interested me for many months. I am now studying the pathology of this disease, but later I expect to take up the study of its bacteriology, protozoology and treatment. It is impossible sometimes to make a correct diagnosis, and the diagnoses made by dentists are no better than the ones we make. The average dentist makes his diagnosis when he is able to squeeze pus from the gums or from a pocket around a tooth. Whenever he sees a drop of pus he makes a diagnosis of pyorrhea. This disease cannot be

cured by the giving of medicine alone. Surgical treatment is required. I have seen about 500 cases and in only two adults have I failed to demonstrate *Endameba buccalis* in the pus. The *Endameba buccalis* is the essential cause of pyorrhea alveolaris. It does not attack normal tissues; it is first necessary to have a damaged tissue, some particular tissue which is susceptible to infection. The *Endameba buccalis* lives and thrives and reproduces itself in the peridental membrane of the human being, and probably in other animals. The kind of cells they feed on are numerous in suppurations next to bone tissue. I do not believe in any treatment that does not take into consideration the rôle played by *Endameba buccalis*. I do not think that 5 per cent. of people escape this infection before they have grown. Not many people, however, lose their teeth before the age of 30, and the molars are the first to go. There is a long sloughing process lasting from five to fifty years. Everybody would lose their teeth from this disease if they lived long enough.

Further Experiments in the Production of Immunity to Tuberculosis

DR. GERALD B. WEBB and DR. GEORGE BURTON GILBERT, Colorado Springs: We have previously shown that a thick emulsion of blood platelets added to a lethal dose of tubercle bacilli appears to modify the course of the infection or to prevent it. However, this does not furnish a practical and safe method of inoculating living virulent bacilli for purposes of immunization. It seemed to us desirable to determine whether an emulsion of lymphocytes added to a lethal dose of tubercle bacilli could influence or prevent infection. The lymphocytes were obtained by injecting 4 c.c. of sterile Ringer's solution in the peritoneal cavity of guinea-pigs and about ten minutes later withdrawing some of the fluid by means of capillary pipets and immediately mixing with a definite number of bacilli obtained in a capillary pipet by means of the Barber method. After incubating for twenty minutes, this mixture was inoculated subcutaneously in the nipple area of adult guinea-pigs. Samples of the fluid obtained from the injected guinea-pigs when stained showed a practically pure emulsion of lymphocytes. Both normal and tuberculous guinea-pigs were used for obtaining the leukocytes in different experiments without appreciable difference in the results. In this series of five experiments no uniform and constant action by the lymphocyte emulsion so far as actually preventing infection could be detected, nor indeed any uniform modification of the course of the disease.

Occurrence of Tubercle Bacilli in Circulating Blood

DR. LOUIS HAMMAN, Philadelphia: My investigation of this question, on patients in advanced stages of pulmonary tuberculosis and in animals inoculated intravenously, leads me to draw the following conclusions: Tubercle bacilli occur in the blood in sufficient number to be demonstrated by animal experiment only in the last stages of pulmonary tuberculosis in human beings, and then only infrequently. In animals they are constantly found when a large number of organisms is injected intravenously. When smaller numbers are injected, and the disease remains localized relatively to the lungs, no bacillemia occurs until toward the end of the investigation, when the disease becomes general.

DISCUSSION

DR. GERALD B. WEBB, Colorado Springs: It is puzzling to men who are working in tuberculosis to know how to interpret the various results they obtain regarding the occurrence of the tubercle bacilli in the circulating blood. Any one who studies the growth of the tubercle bacilli in the incubator realizes what a sticky mass he has to deal with. The typhoid bacilli, as you all know, do not make such a sticky emulsion. In our work in inoculating this bacillus, it is extremely difficult to do the work because of this stickiness. I believe the tubercle bacillus must get into the circulating blood and settle in certain regions. I should like to know more about the type of tubercle bacilli described by Landouzy, that is, the typhoid type of bacilli.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

July, CL, No. 1, pp. 1-156

1 *Partial Resection of Lower Jaw for Cancer. E. M. Foote, New York.
2 Certain Medical Aspects of Recurrent Malignant Tumors. J. B. Herrick, Chicago.
3 Value of Radium, Supplemented by Cross-Fire Roentgen Rays in Treatment of Malignancy. R. H. Boggs, Pittsburgh.
4 Blood Transfusion: Indications; Results; General Management. R. Ottenberg and E. Libman, New York.
5 Gastric Glands in Meckel's Diverticulum. G. R. Callender, U. S. Army.
6 *Gastro-Intestinal Studies, No. X; Analysis of Achylia Gastrica. M. E. Rehfuss, Philadelphia.
7 *Alternation of Pulse; Common Clinical Condition. P. D. White, Boston.
8 Mode of Action and Use of Emetin in Entamebiasis. R. Lyons, New Orleans.
9 Treatment of Scoliosis. J. K. Young, Philadelphia.
10 Histopathology of Calcification of Spinatus Tendons as Associated with Subacromial Bursitis. E. Moschcowitz, New York.

1. **Partial Resection of Lower Jaw for Cancer.**—During the past three years this operation has been performed by Foote on fourteen patients, all men. The ages varied from 30 to 75 years, more than half of the patients being between 45 and 55 years old. As nearly as could be judged the growth started in the jaw (usually in its mucous membrane) in 8 cases; in the lining of the cheek in 3 cases; in the angle of mouth in 2 cases; while the spindle-cell sarcoma seemed to start just below the jaw, possibly from its periosteum. When they first came under observation nine of the patients had recurrent tumors following operation elsewhere. Two presented themselves with primary tumors of the cheek, which Foote excised without resection. In both of these cases subsequent removal of the bone failed to arrest the growth. In three cases resection was the first operation performed, and in these patients there has been no recurrence. Of the eleven resections performed for recurrence, four were known to be merely palliative, but even in these cases the operation seemed well worth while, as the patient was given a clean mouth for varying periods of time. Ten resections were performed with the hope of a permanent cure, three being primary operations and seven after recurrences from other operations. One of these patients died from operation and two others from recurrences, while the remaining seven are at present free from recurrence so far as physical examination can show, after periods ranging from six to thirty-three months.

6. **Achylia Gastrica.**—True achylia in which there is a total lack of acid and enzymes through the entire period of gastric digestion Rehfuss claims is exceedingly rare. By means of the fractional method he has been able to study the entire period of gastric digestion in cases of achylia. His studies show that the commonest form is a complete lack of gastric secretion through both phases (total achylia); two cases were encountered of true psychical achylia, but a pure chemical achylia was never encountered. Attention is called to spurious achylia, which is quite common, and in which there is an ultimate elaboration of juice late in digestion, and enzymes are always present. By means of the administration of parathyroid extract in two cases of bona fide achylia, one of over ten years' duration, a perceptible return of the gastric secretion was noted during the psychical phase. Dietetic and local treatment were instituted at the same time. The phase method of examination is held to be of great value in determining the type of achylia as well as the possibility that at some phase the secretion might still be active, as shown in several of the cases recorded. This finding distinctly improves the prognosis.

7. **Alternation of Pulse.**—True alternation of the radial pulse has been found in 71 of 300 cardiac and cardiorenal patients examined with the sphygmograph by White at the Massachusetts General Hospital in the course of eight

months. It has occurred as commonly as auricular fibrillation; 66 of 201 patients examined, who were suffering from cardiac decompensation in some degree, showed pulsus alternans; 65 others of the 201 showed auricular fibrillation; 15 of the patients having alternation showed it constantly, 55 after premature beats only, and 1 showed a phasic type. The finding of ventricular premature beats has been of considerable value in the present series, 77 per cent. of the cases requiring the premature beats before the alternation of the pulse was exposed. The condition was found most often in people in late middle life or in old age. Hypertension was associated with the alternation in 52 per cent. of the cases. Cardiac enlargement was practically a constant finding. Syphilis and rheumatism apparently played a less important part in the production of the myocardial weakness than did arteriosclerosis.

Electrocardiographic examination in 44 of the cases gave evidence of damage to the *A-V* conducting system in 15 cases, or 34 per cent. Electrocardiographic alternation was found in the *T* deflections after premature beats, in 7 of 18 cases which showed premature beats on the records obtained. Only in 3 cases was there any alternation of the *R-S* deflection after premature beats. Sinus arrhythmia occurred frequently in the series. Digitalis and rest in bed produced clinical improvement in 32 of 53 cases in which digitalis was administered, even though the pulsus alternans may have persisted. In 4 cases the alternation was diminished or banished after this therapy. Twenty-five of the 71 patients died within ten months from the beginning of this study, the majority of the deaths, so far as could be determined, attributable to the cardiac condition directly. The relationship of the degree of alternation to prognosis was as one would anticipate, the greater the degree the shorter the life after the pulse discovery. Arteriosclerosis of heart and kidneys was found only in the 3 patients examined postmortem.

American Journal of Physiology, Baltimore

July, XXXVIII, No. 1, pp. 1-161

11 *Respiratory Dead Space. Y. Henderson, F. P. Chillingworth and J. L. Whitney, New Haven, Conn.
12 *Variations in Effective Dead Space in Breathing. J. S. Haldane, Oxford, England.
13 *Physiology of Stomach. Tonus and Hunger Contractions of Stomach of Newborn. A. J. Carlson and H. Ginsburg, Chicago.
14 *Factors Affecting Coagulation Time of Blood. Influence of Certain Anesthetics. W. L. Mendenhall, Boston.
15 Calorimetric Calibration of Krogh Bicycle Ergometer. F. G. Benedict and L. E. Emmes, Boston.
16 *Effect of Epinephrin on Heart Rate. W. J. Meek and J. A. E. Eyster, Madison, Wis.
17 *Influence of Oil of Chenopodium on Circulation and Respiration. W. Salant and A. E. Livingston, Washington, D. C.
18 *Influence of Diiodotyrosin and Iodothyrin on Secretion of Cerebrospinal Fluid. C. H. Frazier and M. M. Peet, Philadelphia.
19 Response of Vasodilator Mechanism to Weak, Intermediate, and Strong Sensory Stimulation. E. G. Martin and W. L. Mendenhall, Boston.
20 *Spinal Anesthesia in Cat. G. G. Smith and W. T. Porter, Boston.
21 Conduction within Spinal Cord of Afferent Impulses Producing Pain and Vasomotor Reflexes. S. W. Ransom and C. L. von Hess, Chicago.
22 Rhythmical Contraction of Skeletal Muscle Tissue Observed in Tissue Cultures. M. R. Lewis, Washington, D. C.

11. **Respiratory Dead Space.**—The authors have employed five methods of determining on man the respiratory dead space, with generally concordant results and some significant differences. The results show that the dead space expands and contracts passively with the movements of the thoracic walls and lungs. At the level of ordinary breathing the dead space is about 150 c.c. (as practically all previous observers have found). At shallower levels, it is, however, considerably less, with deeper breathing it is much more (480 to 600 c.c.); and with the deepest breaths the (virtual) dead space may exceed a liter in volume. It is much more affected by diaphragmatic than by costal movements. The dead space is found to be of practically the same volume during rest and exercise, providing that the determinations are made at equal extents of chest inflation. This fact indicates that the enlargement of the dead space during hyperpnea is essentially a passive stretching and not an active bronchodilatation. The dead space for oxygen is always larger than that for carbon dioxid. This is shown to be due to the diffusion of carbon dioxid in considerable amounts from the walls of the mouth, trachea, bronchi, etc.

The dead space, even at a uniform extent of chest inflation, is continually undergoing active variations in volume. At times these variations exhibit a distinct rhythm of a period of several minutes. They may amount to as much as 30 per cent. of the mean volume of the dead space in quiet breathing. Some facts are reported which suggest that in a "close and stuffy" room the bronchi, etc., are constricted, and that a distinct chill constricts them further, while pleasantly fresh cool air, on the contrary, induces bronchodilatation. Experiments in a Turkish bath have not, however, afforded concordant results, except that they have shown that during profuse perspiration and cutaneous hyperemia there is a greatly augmented diffusion of carbon dioxid from the walls of the dead space. This doubtless indicates a hyperemia of the respiratory passages. As a part of the carbon dioxid given off in the passages is inspired into the alveoli before being expired, and as the alveolar respiratory quotient may be only a little above 0.7 when the quotient of the mixed expired air is considerably above 0.9 it appears that under such conditions as much as one half of the total carbon dioxid exhaled by the subject may come from the dead space. In asthmatics, the chronic dilatation of the chest stretches the pulmonary passages passively, and thus tends to compensate to some extent for their active contraction.

12. **Variations in Dead Space in Breathing.**—According to Haldane the effective dead space increases enormously with increased depth of breathing, apart from the existence of any hyperpnea or other causes which might also affect the dead space. This increase is apparently due to mechanical distention of the "atria" into which the terminal bronchioles open. The dead space of oxygen is greater than for carbon dioxid. The author maintains that estimates of the composition of alveolar air from the composition of the mixed expired air on the assumption of a constant dead space are fallacious.

13. **Contractions of Stomach of Newborn.**—Carlson and Ginsburg made observations on a number of newborn infants, and on two pups, born 8 to 10 days before term, with results showing that the empty stomach at birth and in the prematurely born exhibits the typical periods of tonus and hunger contractions of the adult, the only difference between infant and adult being the greater frequency and relatively greater vigor of these periods in the young. In the case of the two pups, and in some of the infants, the observations were made before their first nursing. It is thus clear that in the normal mammal the gastric hunger mechanism is completed, physiologically, and is probably active some time before birth.

14. **Influence of Anesthetics on Blood Coagulation.**—Sixty-three successful experiments were performed by Mendenhall. He found that coagulation time is little altered by chloral hydrate unless it is normally short, then it is prolonged. Coagulation time is affected by chloroform as by chloral hydrate, namely, if the process is affected at all it more usually is prolonged rather than hastened. Mendenhall suggests that the effects of chloral hydrate and chloroform are probably the result of disturbance and consequent interaction between two or more organs which are important in the coagulation process; probably liver (intestine?) and suprarenal glands. The evidence is not sufficient to prove that a retarding agent is produced. Coagulation processes are hastened by ether anesthesia. The effect of ether is exerted wholly through its action on the suprarenals.

16. **Effect of Epinephrin on Heart Rate.**—Meek and Eyster observed that the intravenous injection of physiologic amounts of epinephrin into intact unanesthetized dogs with good vagal tone invariably causes a decrease in the heart rate. The action of the epinephrin is doubtless twofold; it accelerates the heart by direct stimulation and inhibits it reflexly through

the vagus. In the authors' experiments the net result of this balanced mechanism was always a decrease in pulse rate. For this reason a secretion of epinephrin could hardly play a part in the immediate cardiac acceleration which follows moderate exercise. In exercise which has been pushed to an extreme degree, however, the accelerating action of epinephrin might well become predominant, for in this condition the authors note a great decrease in vagal tone. In regard to the heart rate then, epinephrin seems to act just as it does in so many other instances; that is, its stimulating effect becomes apparent at a time of great physiologic need.

17. **Pharmacologic Action of Oil of Chenopodium.**—It is shown by Salant and Livingston that the intravenous injection of doses of 0.02 to 0.085 c.c. of chenopodium per kilogram produced a fall of blood pressure in dogs, cats and rabbits. Recovery was observed. The effect was greater in dogs than in rabbits or cats. A second injection of the same dose produced a greater effect, but when this injection was repeated until the total amount reached about 0.2 c.c. per kilogram, no response of the circulation could be observed. This was especially the case in dogs, but to a much smaller extent in cats. This phenomenon was absent in rabbits. Fall of blood pressure was of cardiac origin, as the volume of the kidney decreased with the fall of blood pressure. Frequency of heart action was diminished after oil of chenopodium. A very marked decrease of vagus irritability was observed after oil of chenopodium. Respiratory depression such as decreased amplitude and rate, with apnea, was also caused by chenopodium, but this effect with small doses was less constant than that on the circulation. Cats react more readily than dogs. Small doses may stimulate respiration in rabbits. Apnea was very seldom observed in the rabbit, even after large doses. No methemoglobin or hemolysis was observed even after the intravenous injection of 0.02 or 0.024 c.c. per kilogram, or the introduction of 2 gm. per kilogram into the stomach or small intestine of the cat. Liberation of oxygen in the body by ascaridole is suggested as a possible cause of respiratory depression and apnea. Action of chenopodium on respiration is independent of its effect on the circulation. Reduction of sensitiveness of the respiratory center to carbon dioxid is not the cause of action of chenopodium on respiration. Amounts of chenopodium tolerated by intravenous injection varied in the same animals. The average is approximately 0.03 to 0.35 c.c. per kilogram in dog, cat and rabbit. The less depressant action of chenopodium on respiration in the rabbit is attributed to relatively larger amounts of carbon dioxid in the blood.

18. **Secretion of Cerebrospinal Fluid.**—Frazier and Peet noted that the intravenous injection of diiodotyrosin has an inhibitory influence on the rate of secretion of the choroid plexus. This decrease in rate usually appears in the first half hour after injection, but is not so marked as that obtained with saline extracts of fresh thyroid gland. Iodothyrin in solution, injected intravenously, has little influence on the rate of cerebrospinal fluid secretion when given in small amounts (0.05 gm.). In amounts of 0.3 gm. and 0.5 gm. there is some inhibition of the rate of choroid plexus secretion, but it is not so marked as that produced by diiodotyrosin or saline extracts of fresh thryoid.

20. **Spinal Anesthesia in Cat.**—In the authors' experiments on spinal anesthesia, there was, in twenty animals, but one case in which a moderate but adequate injection in the lumbar region caused a fall in blood pressure that might have been serious (to 55 mm.); and in eight cases in which no curare was used there was no paralysis of respiration after lumbar injection. Even after marked falls in blood pressure, partial but sufficient recovery took place in from thirty to ninety minutes. The duration of low blood pressure appeared to depend more on the amount of drug injected than on the site of the injection. In seven experiments, as the effect of the drug began to wear off, the stimulation of the sciatic nerve caused a fall of blood pressure instead of the usual rise. In these cases, the normal reflex rise returned before the blood pressure attained its original level. A greater fall of blood pressure occurred in the cases in which epinephrin was used in connection with tropacocain or novocain. Measures taken to raise the fallen blood pressure were of little value. It was easy to restore the blood pressure to normal but the normal level could be maintained but a few minutes.

American Journal of Roentgenology, Detroit

March, II, No. 5, pp. 675-707

23 *Some Experiments and Observations on Technic for Deep Roentgentherapy. G. E. Pfahler, Philadelphia.
24 Desirability of Complete Immobilization in Roentgenizations of Head. P. Brown, Boston.
25 Dark Room Illumination. E. W. Caldwell, New York.
26 Losses in Transmission. J. S. Shearer, New York.
27 Suggestion on Use of Coolidge Tube. J. S. Shearer, New York.
28 American Priority in Use of Bismuth for Examination of Human Stomach. A. W. Crane, Marion, Ohio.
29 Inexpensive Multiple Stereoscope and Fluoroscope. H. L. Sampson, Trudeau, N. Y.

23. Abstracted in THE JOURNAL, Oct. 10, 1914, p. 1321.

Boston Medical and Surgical Journal

July 8, CLXXIII, No. 2, pp. 37-74

30 *Use of Magnetism for Localizating Needles in Tissues; Report of Cases. G. H. Monks, Boston.
31 Pollen Therapy in Hay Fever. J. L. Goodale, Boston.
32 Leprosy and Its Relation to Massachusetts. J. A. Honeij, Boston.
33 Relation of Leprosy to Community. G. M. Katsainos, Boston.

30. **Use of Magnetism for Localizing Needles in Tissues.**—Although the brilliant and satisfactory results obtained through the use of the Roentgen rays apparently seem to have rendered unnecessary all other methods of localization, Monks feels that in certain cases, even in those in which a roentgenogram has been furnished, the magnetic test, if properly conducted, may be of distinct assistance to the surgeon. This test will probably be most successful in the following cases: 1. Cases in which the needle fragment is large enough to receive and to retain a charge of magnitism sufficient to attract the indicator needle. 2. Cases in which the needle fragment is near enough to the skin to be strongly magnetized, and also near enough to attract the indicator needle. 3. Cases in which, during the progress of an operation, the incision opens up the tissues in such a manner that the indicator needle may be brought very close to the foreign body. In all other cases, especially in those in which the needle fragment is very fine or very small, and also those in which it is far from the skin, the test is of doubtful value. (These remarks refer only to cases in which the foreign body is a needle, or a needle fragment, and they do not refer to cases in which ordinary fragment or steel or iron are imbedded in the tissues).

Bulletin of Johns Hopkins Hospital, Baltimore

July, XXVI, No. 293, pp. 241-272

34 *An Attempt to Immunize Calves Against Tuberculosis by Feeding Milk of Vaccinated Cows. W. L. Moss, Baltimore.
35 *Complement Fixation in Thyroid Diseases. S. R. Miller and R. E. Fairbank, Baltimore.
36 Two Physician Economists. J. H. Hollander, Baltimore.
37 *Common Organisms in Heated Milk; Their Relation to Its Reactions. L. P. Shippen, Baltimore.
38 *Relations of Splanchnoptosis to Gastric Acidity. E. P. Sandrock, Baltimore.

34. **Attempt to Immunize Calves Against Tuberculosis.**—Six calves of approximately the same age, weight and breed were selected from healthy, nonvaccinated cows. Three of these calves were fed from birth with the fresh mixed milk of several vaccinated cows. The three remaining calves were fed during the same period with an equal amount of fresh mixed milk from nonvaccinated cows, proved by the tuberculin test to be free from tuberculosis. At the end of several months all six calves were inoculated with a medium dose, lethal for normal calves, of bovine tubercle bacilli. The feeding of all calves was continued as previously until the termination of the experiment. At the conclusion of the experiment a necropsy was performed on one calf from each group and the lesions present compared. The calf which had received milk from immunized cows showed a small lesion at the site of inoculation, about 2 cm. in diameter, containing caseous material and surrounded by a thick fibrous wall.

The related axillary lymph glands showed small caseous nodules and there were a few caseous areas in the bronchial lymph glands. The control animal showed at the site of inoculation a caseous abscess, 6 to 8 cm. in diameter, with a thin wall. The related axillary lymph glands were enlarged and caseous, as were also the bronchial lymph glands and those in the region of the gallbladder. The liver contained from 15 to 20 caseous areas 1 to 5 cm. in diameter. The blood of the two sets of cows furnishing the milk for these experiments was tested for tuberculo-antibodies. No difference could be determined by means of the agglutinin, precipitin and complement-binding tests. Nor did similar tests show any difference between the blood of the two sets of calves. The result of the experiment seems to justify the conclusion that a relative degree of immunity against tuberculosis may be conferred on calves by feeding the milk of vaccinated cows.

35. **Complement Fixation in Thyroid Diseases.**—The results of the complement-fixation reaction studied by Miller and Fairbank have been consistently negative in all except the luetic cases. In other words, there has been no evidence of complement fixation except in the case of those serum or spinal fluids which were known to have had and were proved to have a positive 100 per cent. Wassermann reaction.

37. **Common Organisms in Heated Milk.**—Shippen found that in milk heated to 60 and 65 C. (140 and 149 F.) for fifteen minutes, *Streptococcus lacticus, Bacteria troilii* and the spore-bearers survive. They can be recovered from peptonized as well as from normally clotted milk, but their cultural activities do not completely explain the reactions of the milk in which they are found. Other nonspore-bearing organisms are encountered occasionally in milk heated to 60 C. Their scarcity makes it seem probable that they play an unimportant rôle in the reactions of heated milk. They were not encountered in milk heated to 65 C. No gas-producing aerobes were isolated from milk heated to 60 C. From milk heated to 70 and 85 C. only the aerobic spore bearers were recovered by the common method of plating. The cultural activities of this group do not explain the reactions seen in milk heated to these temperatures. *B. welchii* assumes the power of growth in milk under aerobic conditions when transferred to this medium with the common aerobic spore bearers or with *B. troilii* (Matzuschita). Under these circumstances its reactions overwhelm those of the bacteria with which it grows. When the organisms employed are heated to 60 C. *Streptococcus lacticus* inhibits the action produced on milk by *B. welchii* in the presence of *B. troilii* and the aerobic spore bearers, provided these are not markedly in excess. *S. lacticus* fails to inhibit this reaction when the aerobic spore bearers are present in vast numbers, or when no heat is applied. It does so after heating to 65 C. only in the presence of a slowly acting strain of *B. welchii*. The reactions observed in milk heated at temperatures ranging from 60 to 85 C. may be simulated in the presence of *B. welchii*, by the growth of the aerobes commonly surviving the temperatures considered, after the application of the desired degree of heat.

38. **Relations of Splanchnoptosis to Gastric Acidity.**—The free hydrochloric acid was found by Sandrock to be normal or diminished in 83 per cent. of all cases. The total acidity was normal or diminished in 75 per cent. of all cases. Therefore, it would seem quite conclusive from these figures that in ptotic stomachs there is a general tendency toward diminished acidity; and that hypochlorhydria and achylia are more frequenly met than hyperchlorhydria, the ratio being about 2:1. It is of interest to note that fifty cases complicated by marked atony gave a still higher percentage of diminished acidity than the cases in which atony was not so marked. Apparently the acidity in gastroptosis is largely influenced by the amount of associated atony—the greater the atony, the lower the acidity. Achylia was present in 12.5 per cent. of all cases. This at first sight seems to be a rather high figure. Lockwood, however, reports that in his experience achylia was present in nearly 7 per cent. of all patients applying for relief from gastro-intestinal disorders.

Iowa State Medical Society Journal, Des Moines

June, V, No. 6, pp. 215-262

39 Some Hospital Problems. L. W. Littig, Davenport.
40 Treatment of Pulmonary Tuberculosis at Home. J. W. Shuman, Sioux City.
41 Obstruction of Intestine. A. W. Sherman, Burlington.
42 Novocain as Used in Simpler Nose and Throat Operations. E. P. Weih, Clinton.
43 Orthopedics in General Practice. N. Schilling, New Hampton.
44 Importance of Clinical History. G. A. Plummer, Cresco.
45 Nitrous Oxid and Oxygen for General Anesthesia. H. Risk, Waverly.

Laryngoscope, St. Louis

May, XXV, No. 5, pp. 257-320

46 Psychology of "Deafness" with Suggestions as to More Comprehensive Plan of Treatment. P. D. Kerrison, New York.
47 Histopathology of Faucial Tonsil. T. E. Carmody, Denver.
48 Case of Temporosphenoidal Abscess with Unusual Complications. J. Leshure, New York.
49 Case of Multiple Abscess of Brain, Operation, Recovery. J. Guttman, New York.
50 Mastoiditis, Probable Cause of Acute Nephritis. G. F. Keiper, Lafayette, Ind.
51 Tonsillectomy in Adult. Are We Justified in Doing So Many Indiscriminate Tonsillectomies for Remote Infection. C. W. Richardson, Washington, D. C.

Maine Medical Association Journal, Portland

June, V, No. 11, pp. 395-430

52 Psychoses Following Surgical Operations. F. L. Hills, Bangor.
53 Symptoms and Their Interpretation. J. MacKenzie.

Medical Record, New York

July 10, LXXXVIII, No. 2, pp. 47-88

54 Tonsils and Struggle for Existence. R. G. Eccles, Brooklyn.
55 Fluoroscopic Bronchoscopy. E. F. Ingals, Chicago.
56 Carcinoma of Cecum with Extreme Ptosis of Abdominal Viscera. M. R. Smirnow, New Haven, Conn.
57 Syphilitic Reinfection with Notes on Immunity and Treatment. F. W. Smith, New York.
58 Wassermann Reaction According to Wassermann Himself. E. Palier, New York.
59 *Conservative Treatment of Enlarged (Tuberculous) Glands of Neck. L. B. Meyer, New York.
60 Contraindications to Intra-Abdominal Use of Oil. W. F. Burrows, New York.

59. **Treatment of Tuberculous Glands of Neck.**—It is Meyer's opinion that no case of enlarged glands of the neck (tuberculous or otherwise, and in a large percentage of cases a differential diagnosis is impossible without the removal of a specimen) should be operated on radically, without at the same time, or better, previously, correcting all pathologic conditions in the mouth and nasopharynx which might act as a source of infection. These glands frequently are simply inflammatory glandular enlargements, such as one finds anywhere in the body in glands which happen to be in the path of lymphatic drainage of an infection.

New Mexico Medical Journal, Las Cruces

June, XIV, No. 3, pp. 67-96

61 Tuberculin in Treatment of Tuberculosis. W. T. Murphey, Albuquerque.
62 Practicing Physician. J. W. Trask, U. S. P. H. Service.

New York Medical Journal

July 10, CII, No. 2, pp. 65-116

63 Senility, Premature Senility and Longevity. H. M. Friedman, New York.
64 Vaccine Therapy in Diseases of Nose, Throat and Ear. G. M. Coates, Philadelphia.
65 *Abdominal Tuberculosis. A. Bassler, New York.
66 Cancer of Bladder and Kidneys. V. C. Pedersen, New York.
67 Uterine Cancer. S. Dahl, Chicago.
68 Simple and Efficient Head Bandage. G. O. Jarvis, Ashland, Ore.
69 Elephant Hydrocele. A. H. Peacock, Seattle, Wash.
70 Increased Responsibility for Private Physicians. L. I. Harris, New York.
71 El Gebir, Visionary. I. L. Nascher, New York.
72 Surgical Course for Hospital Interns. A. E. Chace, Tarrytown.

65. **Abdominal Tuberculosis.**—Bassler has seen two cases of marked splenic tuberculosis (both painful) operated on, both ending fatally. In one the abdomen was dry and in the other a marked ascites existed.

Northwest Medicine, Seattle, Wash.

June, VII, No. 6, pp. 171-204

73 Anatomic Consideration of Visceral Ptosis. R. B. Dillehunt, Portland, Ore.

74 Roentgenoscopy of Gastro-Intestinal Tract. A. E. Rockey, Portland, Ore.
75 Roentgenoscopy of Gastroptosis Coincident with Coloptosis. J. P. Tamiesie, Portland, Ore.
76 Relation of Surgical Procedures and General Asthenic State. N. W. Jones, Portland, Ore.
77 Altered Condition of Neck and Chest Muscles and Subcutaneous Tissue Overlying Them as Important Aids in Early Diagnosis of Tuberculosis. F. M. Pottenger, Monrovia, Calif.
78 Tuberculosis Institutions of Washington. B. I. Beals, Seattle.

Ohio State Medical Journal, Columbus

June, XI, No. 6, pp. 361-420

79 Indications for Operations. J. C. Oliver, Cincinnati.
80 Anesthesia in Obstetrics. A. J. Skeel, Cleveland.
81 Brief History of Care of Insane in Ohio. C. S. McDougall, Athens.
82 Prostatectomy Under Spinal Anesthesia; Case Report. E. S. Breese, Dayton.
83 Probable Cause and Logical Treatment of Epilepsy. C. A. L. Reed, Cincinnati.

Ophthalmic Record, Chicago

June, XXIV, No. 6, pp. 277-330

84 Vertex-Refraction in Its True Aspect. C. F. Prentice, New York.
85 Colloidal Theory of Pathology of Glaucoma. J. A. McCaw, Denver.
86 Advantage of Small Amount of Astigmatism with Rule. O. Wipper, Chicago.
87 Plea for More Uniform Reporting of Visual Acuity. H. S. Gradle, Chicago.
88 Operation for Prevention of Symblepharon. E. G. Starr, Buffalo.
89 Ciliary Processes in Pupillary Area. C. A. Clapp, Baltimore.
90 Improved Hatpin for Visual Field. E. E. Maddox, Bournemouth, England.

Surgery, Gynecology and Obstetrics, Chicago

July, XXI, No. 1, pp. 1-134

91 *Perinephritic Abscess. E. P. Richardson, Boston.
92 New Facts and Their Clinical Significance Concerning Cancer. W. C. MacCarty, Rochester, Minn.
93 Trauma Into and About Joints. C. E. Caldwell, Cincinnati.
94 *Diagnosis of Enteroliths by Means of Roentgen Rays; Report of Two Cases. G. E. Pfahler and C. J. Stamm, Philadelphia.
95 *New Method of Securing Bony Ankylosis of Spine in Pott's Disease by Means of Bone Transplant. A. E. Halstead, Chicago.
96 *Splenectomy for Hemolytic Icterus. C. A. Elliott and A. B. Kanavel, Chicago.
97 Blood Transfusion by Citrate Method; Report of Cases. R. Lewisohn, New York.
98 Plastic Operation for Buyo Cheek Cancer in Its Early Stage and Report of Buyo Cheek Cancer Cases. G. G. Davis, Chicago.
99 *Pulsion Diverticulum of Esophagus. O. C. Gaub and C. Jackson, Pittsburgh.
100 Cysts of Mesentery; Report of Three Cases. E. G. Jones, Atlanta, Ga.
101 *Treatment of Angiomata by Injection of Boiling Water (Wyeth Method). F. Reder, St. Louis.
102 Roentgentherapy in Nonmalignant Deep-Seated Lesions. J. T. Case, Battle Creek, Mich.
103 Disinfection of Hands and Abdominal Skin Before Operation. E. McDonald, New York.
104 Report on Skin Disinfection by McDonald's Solution. C. G. McMullen, Schenectady, N. Y.
105 Sterilization of Skin by McDonald's Germicidal Solution. E. MacD. Stanton, Schenectady, N. Y.
106 Cystalgia; Urethralgia. L. J. Roth, Los Angeles.
107 *Bulgarian Bacillus in Treatment of Cystitis and Pyelitis with Alkaline Urine. F. R. Hagner, Washington, D. C.
108 Cancer Destruction by Radium. J. B. Bissell, New York.
109 Modified Gas-Oxygen-Ether Apparatus. T. L. Dagg, Chicago.
110 *New Procedure for Cure of Chronic Synovitis. F. J. Cotton, Boston.
111 Suprapubic Prostatectomy Simplified. G. S. Peterkin, Seattle, Wash.
112 Goiter Operations with Simplified Technic. A. E. Benjamin, Minneapolis.
113 Treatment of Fractures by Autogenous Bone Transplants. F. G. Dyas, Chicago.
114 *Technic Used in Applying Anastomotic Buttons. R. Finochietto, Buenos Aires, Argentine.
115 Perineal Section in Boys. W. Van Hook, Chicago.
116 Acute Pyelitis; Its Diagnosis and Treatment. K. H. Aynesworth, Waco, Texas.
117 Position of Stability in Treatment of Fractures. E. B. Claybrook, Cumberland, Md.
118 *Improved Gastrostomy. M. R. Bookman, New York.
119 Non-Leakable Trocar. C. J. Miller, New Orleans.

91. Perinephritic Abscess.—Without minimizing the importance of infection of the perirenal fat from a distance through the lymphatics, and without implying the frequent participation of the kidney, Richardson calls attention to the following points: The commonest organism, the staphylococcus, producing "primary" perinephritic abscess is also the most frequent organism concerned in producing focal cortical abscess in the kidney. "Primary" perinephritic abscess occasionally follows peripheral pus foci. In such cases it is reasonable to suppose that infection has followed a metastatic hematogenous course. A urine normal on clinical examination does not exclude the possibility of cortical renal abscess. The previous occurrence of a peripheral pus focus due to the staphylococcus may be of some importance in the diagnosis of continued fever with leukocytosis and lumbar or abdominal pain. The mortality for fifty-nine cases was 10.2 per cent. with no deaths from secondary operations. The treatment in general has been simply to drain, reserving further measures for a secondary operation.

94. Diagnosis of Enteroliths by Roentgen Rays.—It is stated by the authors that enteroliths should be suspected when there is a movable mass in the abdomen, or when opaque bodies are found in the appendiceal region during the course of roentgenoscopy of the ureters. They can be definitely demonstrated by filling the colon with gas, or better by filling it with an opaque enema and demonstrating the mass within the lumen of the bowel. By means of glycerin enemas and manipulation these enteroliths in the bowel can probably be removed without operation.

95. Ankylosis in Pott's Disease; Bone Transplant.—Halstead describes his method as follows: In lateral prone position, an incision beginning on the median line above the kyphos is curved around this prominence and terminates below at the median line. A flap of skin and fascia is reflected back to the spinous processes: An incision is made along the lateral aspects of the tips of the spinous processes and extended for a distance of two vertebrae above and two below the diseased vertebrae. With a sharp chisel the soft tissues, including periosteum and the erector spinae muscles, are separated from the lateral surfaces of the spinous processes well down to the vertebral arch: After retracting outward, the tissue is separated from the spinous processes, the spines are sawed through at their bases, one above and one below the kyphosis: The severed spinous processes, with the connecting ligaments, are strongly retracted to one side and away from the bases. The prominent bases of the spinous processes at the apex of the kyphos are cut away with a chisel.

A bone transplant is removed from the tibia in the usual way. The transplant is of sufficient length to reach from at least one vertebra above the diseased bones to one below. It is also fashioned so that it will have periosteum on one lateral surface and on one border. From the lateral surface the periosteum is reflected back to the border to which the periosteum is attached. The transplant may be held secure in a small vise while it is cut to meet the requirements of the case. The transplant is inserted between the cut surfaces of the divided spinous processes. The border of the transplant to which the periosteum is attached is toward the side from which the soft tissues have been retracted. The transplant is held in place by replacing the retracted, detached spinous process, and secured by passing heavy chromicized catgut sutures through the periosteum of the detached spinous process, the periosteum of the free margin of the transplant, and then through the periosteum at the base of the spinous process. The deeper portions of the wound are closed by buried catgut sutures, and the skin by silkworm-gut sutures. The spine is immobilized by means of a plaster-of-Paris molded splint for ten weeks.

96. Splenectomy for Hemolytic Icterus.—Of the 48 cases collected by Elliott and Kanavel only 2 patients died, one shortly after operation, and the other in six weeks, from sepsis, a surprisingly good result when one considers the serious condition of some of the patients. As for the ultimate results, the 46 patients who recovered are reported as "cured"; that is to say, they were relieved of their jaundice and crises. The effect on the blood picture was immediate. In 7 cases reported in the first two weeks 4 gained from one to two million reds; in 8 cases reported in the third and fourth weeks 3 gained over a million, 2 over two million, and

1 over three million; in 9 cases reported in from three to six months 5 gained a million, 4 three million, and 1 five million; and, finally, of 10 reported after six months 1 gained one million, 5 two million, and 4 three million, leaving one that had not gained appreciably, but the blood count here showed four and a half million. These increases in every case brought the blood approximately to normal; in 22 cases it was above four million, and of these, in 17 above four and a half million, and, in 3, six million or over. The hemoglobin followed the rise in the number of reds. The white blood count was normal unless there were complications. The effect on the fragility of the red blood cells was less conspicuous. The fragility was increased before operation in every case, varying from 0.50 to 0.70. One case is mentioned in which the condition became normal in five weeks, but for the most part little change was noted before three months, when several are mentioned as being nearly normal. The jaundice decreased in most cases in the first few days, and in nearly all instances was absent at the end of two weeks, while the acholuric crises, with the attendant malaise, headache and fever ceased entirely.

99. **Pulsion Diverticulum of Esophagus.**—In the operation devised by Gaub and Jackson, having exposed the esophagus the surgeon asks the esophagoscopist to push out the diverticulum into the external wound. The surgeon seizes the bottom of the pouch with forceps. He then asks the esophagoscopist to insert the esophagoscope into the subdiverticular lumen of the esophagus. The surgeon then amputates the redundancy, being careful not to make undue tension in order to determine with precision the amount of tissue which really constitutes redundancy. Closure of the wound, dressing and after-care do not differ after this procedure from that of the usual operation.

101. Abstracted in THE JOURNAL, Jan 30, 1915, p. 464.

107. Abstracted in THE JOURNAL, Jan. 30, 1915, p. 465.

110. **New Procedure for Cure of Chronic Synovitis.**—In a case cited by Cotton the synovial membrane was pulled out through the cut in the fibrous capsule (a cavity of 1 by 1¼ inches) and then rolled back and carefully sutured (with catgut), so as to leave no exposed edge of synovial membrane. The joint was washed out with normal salt solution and left half full. The vastus internus muscle was brought together over the gap with lightly drawn mattress sutures of catgut, and the skin was closed in the usual way with interrupted sutures of silkworm gut. Thirty-nine days after the operation there was no fluid and no infiltration. Except for the recent scars, there was nothing to note except the quadriceps atrophy, still marked on both sides. There was a little grating of the now dry articular surfaces on motion. Motion was now much freer than before the relief of joint tension. The patient complained of no pain and there was no muscle spasm.

114. **Applying Anastomotic Buttons.**—Finochietto's method consists in pressing between the blades of a hemostatic forceps a designated portion of the wall of the stomach or intestine. Around the blades of the hemostat a purse-string suture is inserted. Through the zone pressed together by the hemostat, an incision is made, and the catheter or button is introduced into the bloodless incision.

118. **Improved Gastrostomy.**—In a case of inoperable mediastinal tumor (extra-esophageal), a circular purse string deep Lembert of Pagenstecher linen was placed by Bookman well up near the lesser curvature, the stomach opened, tube inserted, and the suture tied. The next suture was begun at least a half-inch below the tube and carried around in a circular manner so as to pass less than a quarter inch above the tube, then passed around to where the suture began and there tied. This pointed the tube within the stomach upward; two more sutures were placed in a like manner, the tube fastened to the stomach and abdominal wall, and the wound closed. As more of the gastric wall was utilized below than above, the lower part acted as a spring and forced the apex of the cone close to the anterior wall of the stomach, and the channel, being entirely within the stomach and movable, created a distinct valvular action.

Tennessee State Medical Association Journal, Nashville

June, VIII, No. 2, pp. 77-116

120 Relation of Practicing Physician to Public Health Administration. J. W. Trask, U. S. P. H. Service.
121 Hoary-Headed Heresy. W. K. Vance, Bristol.
122 Some Experiences in Drug Addiction. H. E. Goetz, Knoxville.
123 Focal Infections. J. B. Blue, Memphis.
124 Tendency Toward Drug Nihilism. H. Lockhart, Coalmont.
125 Pyloric Stenosis in Infants. O. W. Hill, Knoxville.
126 Plea for More Closely Organized Medical Profession. R. E. L. Smith, Doyle.
127 Drugs and their Administration. H. Hawkins, Jackson.
128 Kidney Colic. O. S. McCown, Memphis.

United States Naval Medical Bulletin, Washington, D. C.

July, IX, No. 3, pp. 353-546

129 Normal Heart in Navy. G. F. Freeman, U. S. Navy.
130 Surgical Diagnosis and Technic Involving Appendix. A. M. Fauntleroy, U. S. Navy.
131 Functional Testing of Ear. G. B. Trible, U. S. Navy.
132 Diagnosis of Gastric and Duodenal Ulcer by Means of Roentgen Ray. A. L. Clifton, U. S. Navy.
133 Damage of Syphilis to Navy. G. F. Cottle, U. S. Navy.
134 Recent Conceptions of Bronchial Asthma. M. H. Sicard, U. S. Navy.
135 Venereal Head. G. F. Cottle, U. S. Navy.
136 New Messing System for Naval Hospitals. F. E. Simmons, U. S. Navy.
137 Messing Arrangements in U. S. Naval Hospital, Philadelphia. H. A. Dunn and P. J. Waldner, U. S. Navy.
138 Castor Oil; Aseptic Dressing on Field of Battle. A. E. Gallant, U. S. Navy.
139 Case of Fracture Dislocation of Spine; Laminectomy. R. E. Ledbetter, U. S. Navy.
140 Case of Aneurysm of Left Posterior Inferior Cerebellar Artery. E. L. Woods, U. S. Navy.
141 Case of Malignant Endocarditis (Gonorrheal). M. E. Higgins, U. S. Navy.
142 *Possible New Roentgen Ray Sign of Tuberculosis. E. Thompson and H. L. Gall, U. S. Navy.
143 Case of Purpura Hemorrhagica (?) with Marked Leukopenia. W. L. Mann, Jr., U. S. Navy.
144 *Report of Twenty-Eight Cases of Pyorrhea Alveolaris Treated with Emetin Hydrochlorid. A. H. Allen, U. S. Navy.
145 Intravenous Injection of Neosalvarsan in Concentrated Solution. C. B. Camerer, U. S. Navy.

142. **Roentgen Ray Sign of Tuberculosis.**—A new condition was observed by Thompson and Gall which may be of some value in the diagnosis of local tubercular foci in the lungs. This condition consists of an irregularity in the rounded outline of the diaphragm line. Under normal conditions the diaphragm is sharply outlined as a smooth line of easy curves. The difference in density of the liver and lungs makes it very easy to observe any break or irregularity in the contour of the line. When viewed with the fluoroscope the diaphragm is seen making its excursions up and down and always preserving its general contour whatever it may be. In a great number of cases of pulmonary tuberculosis the plates do not show a smooth outline of the diaphragm. Irregularities are seen and large humps sometimes occur. These elevations are always above the general line of the diaphragm and are at the expense of the pulmonary side. In other words, it appeared that there might be a place to fill in to equalize the tension, and the diaphragm had bulged up to do it.

144. **Pyorrhea Treated with Emetin Hydrochlorid.**—A hypodermic injection of emetin hydrochlorid, one-half grain, was given daily by Allen in the arm for six days. Active antiseptics were used locally by the dentist in all cases. These included various antiseptic alkaline mouth washes and the local application of trichlorid acetic acid or tincture of iodin to the pus pockets. At the end of six days smears were examined, and if amebas were still present three more hypodermic injections of emetin were given. Nine injections has been the greatest number that have been given. In three cases in women, owing to the soreness of the arm resulting from the daily use of the hypodermic syringe, the injections were alternated with the administration of two Alcresta ipecac tablets three times daily. This work, started in January, 1915, has covered a period of five months. The use of emetin in conjunction with local measures has been beneficial in 77 per cent. of the cases although an actual cure was obtained in only 35 per cent.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Journal of Medical Research, Calcutta

April, II, No. 4, pp. 823-1001

1 Spleen Rate and Other Splenic Indices; Their Nature and Significance. S. R. Christophers.
2 *Alkalinity of Blood in Kala-Azar and Cholera and Technic of Its Estimation. L. Rogers and A. J. Shorten.
3 Test for Residual Epidemicity. A. G. McKendrick.
4 *Quinoidin. A. C. MacGilchrist.
5 Vibricidal Power of Bile of Animals After Administration of Hexamethylene Tetramin and Its Compounds. E. D. W. Greig.
6 Cholera "Carrier" in Relation to Water Supply of Calcutta. E. D. W. Greig.
7 Experimental Transmission of Indian Kala-Azar to Animals. F. P. Mackie.
8 Insects and Kala-Azar. F. P. Mackie.
9 Causes of Monsoon Diarrhea and Dysentery in Poona. J. Morison.
10 Artyfechinostomum Sufrartyfex. C. Lane.
11 *Wassermann Reaction in Malaria, Kala-Azar and Leprosy. W. D. Sutherland and G. C. Mitra.

2. Alkalinity of Blood in Kala-Azar and Cholera.—A consideration of sixteen unselected cases by Rogers and Shorten brings out the striking fact that, apart altogether from the occurrence of uremic symptoms, there is a constant reduction of the alkalinity of the blood in cholera which is of a very marked character in all but the very mildest cases, and the degree of which increases steadily with the severity of the disease. A reduced alkalinity of the blood is, therefore, a most essential and important feature of the blood changes in cholera, and one which requires to be combated in the treatment of the disease. As a matter of fact, for several years past all the cholera cases have been given, as a routine measure, 40 grains of potassium citrate and 4 drams of liquor ammoniae acetatis with a view to maintaining the alkalinity of the blood, and in the hope of reducing the dangers of uremia. It is thus clear that more active measures are necessary if a dangerous reduction of the alkalinity is to be prevented in severe cases of cholera.

Injections of solutions of sodium bicarbonate are the most generally used and powerful means of raising the alkalinity of the blood, and have been given much in the treatment of the acidosis of diabetes and in postcholeraic toxemia with suppression of urine. The authors' observations furnish some data regarding the effect of such treatment in remedying the reduced alkalinity in this condition. In the first place, it should be noted that there is a natural tendency for the alkalinity to rise when free secretion of urine is obtained. The effect of sodium bicarbonate intravenously is evident. The data regarding the fatal cases of uremia indicate that when a very low alkalinity, such as hundredth normal and upward, has been reached, together with nearly or quite complete suppression of urine, for two or more days, even intravenous injections of sodium bicarbonate usually fail to avert death with uremic symptoms, although the alkalinity may have been much raised by the treatment and life considerably prolonged.

4. Quinoidin.—Laboratory and hospital results prove that quinoidin is much inferior to quinin as an antiprotozoal or antimalarial agent.

11. Wassermann Reaction in Malaria.—The blood of 50 patients in which malarial parasites were present, was tested by Sutherland and Mitra for a Wassermann reaction. Nine cases gave a positive reaction; at least 3 were probably syphilitic. The authors also examined the blood of 38 cases of kala-azar. In all of these the parasite had been found, by careful and competent observers, in smears taken from splenic material obtained by puncture. Of the 38 patients, 10 gave a positive and 28 a negative reaction. Of the 10 positive cases, only 2 gave a more than slightly positive reaction. They examined the serum of 34 patients of undoubted leprosy. Fourteen were of the anesthetic form; of these, 4 gave a positive and 10 a negative Wassermann. Of the remaining 20 patients, 7 gave a positive and 13 a negative Wassermann.

Journal of Tropical Medicine and Hygiene, London

June 15, XVIII, No. 12, pp. 133-144

12 Pigmented Parasites of Cold-Blooded Animals, with Some Notes on Plasmodium of Trinidad Iguana. C. M. Wenyon.

Lancet, London

June 26, I, No. 4791, pp. 1323-1382

13 Trypanosomes. D. Bruce.
14 Use of Magnesium Sulphate in Treatment of Tetanus. S. J. Meltzer.
15 *Study of Etiologic Factor in So-Called Cerebrospinal Fever. R. Donaldson.
16 Severe Case of Intractable Syphilis Treated Satisfactorily with Hectin. E. G. Ffrench and C. H. Mills.
17 *Vaccines in Treatment of Respiratory Diseases. R. J. Rowlette.
18 Roentgen-Ray Localization and Removal of Foreign Bodies on Roentgen-Ray Table. J. R. Caldwell.

15. Etiologic Factor in Cerebrospinal Fever.—Donaldson examined the cerebrospinal fluids from about seventy cases; with a view of obtaining organisms from the blood of these cases he withdrew a few cubic centimeters of blood from the median basilic vein of twelve patients at various stages of the disease. The blood was citrated at once, placed in nutrient broth with a + 10 reaction and incubated for several days. An interval of two or three hours elapsed between the sowing of the tubes and their arrival in the incubator. Within twenty-four hours on 1 per cent. glucose-agar there was a copious growth of colonies on each series of plates.

Donaldson suggests that the causal organism of the epidemic dealt with in his article is a diphtheroid rod closely related to the Klebs-Löffler bacillus, of which, indeed, it may actually be a variant, and that we are witnessing the struggle of a new disease to win a place among the great epidemics of the world. This diphtheroid rod is an extremely pleomorphous organism and may give rise to Hoffmann-like forms, to what appear to be meningococci, etc. It is probably very widely spread in Nature in one of its more resistant forms, and it is this form and not the meningococcal one which is transmitted from one person to another. It is also probably to be found more frequently among individuals than we imagine. The disease may give rise to the most diverse symptoms, evidently due to an actual invasion of the body by the infective agent, and not merely to the action of toxins manufactured locally. It is in this respect that it differs from diphtheria. In other ways, however, there is a certain similarity between the two diseases. The above hypothesis offers an explanation why serum fails so often in the treatment of so-called cerebrospinal meningitis, and the analogy to diphtheria suggests that treatment on similar lines should be adopted. It further suggests that fresh investigation must be made into the life history of the gonococcus, and offers an explanation of the failure of vaccines in that disease.

17. Vaccines in Respiratory Diseases.—The series reported on by Rowlette consists of fourteen cases: Chronic nasopharyngeal catarrh, 4; recurrent acute nasopharyngeal catarrh, 4; recurrent acute general catarrh with bronchitis, 3; chronic bronchitis, 2; and pulmonary abscess, 1. The 4 cases of chronic nasopharyngeal catarrh were of long standing, and all the patients had undergone local surgical treatment of various kinds. The infections were: in 1 case pneumococcus, in 1 pneumococcus and *Micrococcus catarrhalis*, in 1 streptococcus, and in 1 *Staphylococcus aureus* and streptococcus. The dosage employed was pneumococcus, 10-60,000,000; *Micrococcus catarrhalis*, 50-200,000,000; streptococcus, 10-25,000,000; and *Staphylococcus aureus*, 50-500,000,000. The number of injections varied from 6 : 18. The results in three of the cases were entirely satisfactory; in the fourth the treatment had no effect.

Four cases of acute recurrent nasal catarrh were treated. In 2 the infection was of *Micrococcus catarrhalis*, in 1 of streptococcus, and in 1 *Staphylococcus aureus*. Of the 3 cases of acute recurrent general catarrh, 2 were infections of *Micrococcus catarrhalis* and 1 of a staphylococcus. Rowlette has treated only 2 cases of chronic bronchitis, 1 with *Micrococcus catarrhalis* and 1 with streptococcus. He does not think that either case was benefited to any appreciable extent, but in neither case was a sufficient trial given. Taking his series as a whole, in 10 of the 14 cases treated the result was very satisfactory; in 1 there was a temporary improvement, and in 3 no result could be traced. Classifying the cases treated according to infection, the results are as follows: *Micrococcus catarrhalis* 5, of which 3 became quite well, 1 was

benefited and 1 unaffected; pneumococcus 2, both became well; staphylococcus 1, became well; streptococcus 3, of whom 2 became well, and 1 was unaffected; streptococcus and staphylococcus 2, both became well; *Staphylococcus aureus* 1, became well.

Sei-I-Kwai Medical Journal, Tokyo

June, XXXIV, No. 6, pp. 33-36

19 Acute Cholecystitis. T. Kiuchi.
20 Average Mortality of Tuberculosis Taken from Several Insurance Companies in Japan and Importance of Inspection for Early Diagnosis. I. Oyama.
21 Pain of Os Calcis. K. Kaneko.
22 Gummatous Arthritis. Y. Misumi.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

May, IV, No. 5, pp. 177-224

23 *Blood Pressure and Viscosity in Vomiting of Pregnancy and in Heart Disease. P. Pellissier.
24 *Disturbance in Motor Functioning Following a Confinement. (Troubles de motilité para-obstétricaux.) Gautiez and Tissier.

23. **Relations Between Blood Pressure and Viscosity.**—Pellissier refers in particular to conditions in this respect in the uncontrollable vomiting of pregnancy and heart disease. He first studied the relations between the blood pressure and the viscosity of the blood in healthy pregnant and nonpregnant women and then in five pregnant women with uncontrollable vomiting, in two cases of aortic insufficiency, in four of mitral stenosis, two of mitral insufficiency and two of other forms of heart disease. The findings in the various cases are related in detail, all showing how the blood pressure fluctuates with heart disease, early becoming irregular, while the viscosity increases as soon as the lesser circulation begins to suffer from it. When early in pregnancy there is prolonged vomiting and the blood pressure shows these changes and the viscosity of the blood becomes increased, the outlook is so grave that active treatment should not be delayed. Mild or well-compensated valvular defects do not influence either the blood pressure or the viscosity.

24. **Postpartum Motor Disturbances.**—Gautiez and Tissier have noticed in numbers of cases that women getting up from a confinement are liable to limp and stumble and to complain of pain in the feet or hands. Some of the women present disturbances like those of the painful flatfoot of adolescents, an actual tarsalgia. They explain it as the result of the abnormal way in which the foot is used during the last months of pregnancy. The weight is thrown more on the heels, to balance the heavy abdomen, and the bones and muscles undergo a special fatiguing strain. On this is superposed the general relaxation of the joints accompanying the delivery and the impeding of the circulation in the legs inevitable with a pregnancy. Under the rest in bed the overstrained and fatigued tissues display a tendency to rapid atrophy. When the woman tries to use the feet normally once more, the arch has lost its elasticity and there is functional disturbance with more or less deformity of the instep. The muscles must be toned up; electricity and massage will help in this; but the main reliance must be on an inner sole or other appliance to raise the inner side of the arch and throw the weight on the outer edge of the foot, or by elastic stepping on the front part of the foot or by lifting weights fastened to the toes, systematically increasing the weight. If the woman limps or drags one foot, a tender point can be found usually in the tendon of the rectus muscle, where it was overstrained or partly ruptured during delivery. Under repose and local heat, normal conditions are restored and the lameness subsides. The condition is like that when the abdominal muscles in an infant are weak and flabby; the child finds it difficult to learn to stand. The legs do not get the normal support from the flabby abdominal muscles.

In conclusion attention is called to the pain and impotence of the wrist sometimes complained of by women who have to lift heavy children or invalids. The repeated strain finally stretches the external ligament of the radiocarpal articulation. A tender point can be discovered at the juncture of the radius and the scaphoid bone. Under rest, moist heat and immobilization of the overstretched ligament, the condition soon rights itself if taken in time before inflammation has developed.

Bulletin de l'Académie de Médecine, Paris

June 8, LXXIII, No. 23, pp. 671-684

25 *Prognosis of Wounds of the Cervical Spinal Cord. P. Marie.
26 *Bacteriologic Control of the Pus in Wounds—Pyoculture—as Index of Efficiency of Treatment Adopted. P. Delbet.
27 Resection of the Knee May Render Amputation Unnecessary. (La résection du genou, dans certaines fractures infectées graves, peut remplacer l'amputation.) T. Tuffier.
28 *War Neuroses. P. Sollier.

25. **Prognosis of Wounds of Cervical Spinal Cord.**—Marie states that only five have died of the eighteen patients in his charge with paralysis of both arms and legs resulting from a gunshot wound of the cord in the neck. The quadriplegia kept up for weeks and months, with sphincter disturbance, but five of the men gradually recovered the use of their limbs in a few months; one is now able to run. The outcome is better the earlier these wounded are able to get special neurologic treatment.

26. **Bacteriologic Control of Wounds in War.**—Summarized in the Paris Letter, THE JOURNAL, July 10, p. 183.

28. **Neuroses Among the Troops.**—Sollier cites statistics from eight hospital centers which show that in about 16.2 per cent. of 2,435 wounded soldiers there was evidence of a traumatic neurosis, that is, a total of 395 cases. Excluding those with neuropathic antecedents, only 250 cases are known of a neurosis developing under the stress of war.

Journal d'Urologie, Paris

June, VI, No. 3, pp. 297-408

29 *Comparative Secretion in the Two Kidneys in the Dog. R. Lépine and R. Boulud.
30 Development and Comparative Histogenesis of External Genital Organs. E. Retterer. Commenced in No. 2.
31 Repair of Ruptured Urethra. Oudard.
32 *Stricture of the Ureter. (Rétrécissements de l'uretère.) E. Jeanbrau.

29. **Secretion in the Two Kidneys Compared.**—The research described was done on thirty-four dogs; nothing was observed that indicated alternate functioning on the part of the kidneys. There was very little difference between the amount of their secretion unless the right kidney possibly secreted more abundantly at times.

32. **Stricture of the Ureter.**—Jeanbrau discusses the pathologic anatomy of congenital and acquired stenosis of the ureter. The symptoms when there is no infection are exactly like those of intermittent hydronephrosis from kinking of the ureter. The only difference is that the portion of the ureter above the stenosis becomes distended first, while with hydronephrosis the pelvis shows the effect first. The pain consequently is felt a little lower down with stenosis of the ureter. Pain starting in the pelvic ureter and spreading toward the kidney suggests stenosis of the ureter. The onset of the pain almost at once after copious drinking is another suggestive feature of the clinical picture. In dubious cases copious drinking to elicit this pain is an aid in differentiation. The kidney is liable to become distended and atrophy, and the congestion in the kidney invites infection. Any tonsillitis, influenza or colon bacilli process anywhere is liable to start an infectious focus in the kidney as it is predisposed by the secondary congestion and distention. Nephrectomy then offers the only chance of a cure. All this can be avoided by an early diagnosis and slow and gradual dilatation of the ureter with much the same technic as for dilatation of stenosis in the urethra. If this fails, operative relief is necessary, cutting the stenosis from within or from without. If the stricture is close to the kidney pelvis or to the bladder, it is usually best to sever the ureter and implant it anew in the pelvis or bladder.

Presse Médicale, Paris

June 10, XXIII, No. 26, pp. 197-205

33 *Functional Substitution Relieves Crippling Traumatic Paralysis. (Adaptation fonctionnelle par suppléance dans les paralysies traumatiques des nerfs.) H. Claude, R. Dumas and R. Porak.
34 Vessels and Nerves of the Base of the Neck. L. H. Farabeuf and A. Broca.

33. **Recovery of Partial Function After Wounds of Peripheral Nerves.**—Claude calls attention to the way in which muscles may learn to do the work of certain paralyzed muscles, assuming tasks quite the opposite of their physiologic work. This substitute action is frequently mistaken, he says, for recuperation of function by the paralyzed muscle when in fact the paralysis has not been at all altered. The improvement in the use of the limb is then liable to be ascribed to the treatment that has been given, when, in fact, this has had no effect on the muscle to which it has been addressed. Intelligence and ingenuity aid in bringing this substitute muscular functioning into play; the men try and try again and again until they succeed in finding some way or position in which they can make use of the paralyzed limb. The lazy and apathetic do not succeed in the same way. Six illustrations are given showing some typical instances of what can be accomplished in this line with a paralyzed hand.

Berliner klinische Wochenschrift

June 7, LII, No. 23, pp. 597-624

35 Proposed "Albumin Marmalade" to be Made from Blood of Slaughtered Cattle. (Verwendung des Blutes der Schlachttiere als Nahrungsmittel.) E. Salkowski.
36 Digestibility of Mushrooms Not Enhanced by Pulverizing. (Verdaulichkeit der Pilze.) A. Loewy and A. v. d. Heide.
37 *Syphilis and Symptoms on the Part of the Stomach. T. Brugsch and E. Schneider.
38 *Necessity for Orthopedic Training in Hemiplegia. L. Mayer.
39 Roentgenology of the Esophagus. J. Schütze.
40 *Multiple Ligation of Varicose Vein. (Behandlung von Varicen an den unteren Extremitäten nach der Methode von Kuzmik-Schede.) K. Secher.
41 Consent to Operations. (Die Operationsfreiheit im Lichte fortschreitender Strafrechtsreform.) H. Lieske. Commenced in No. 22.
42 Syphilis and Scorbutus Ascribed to Eating Sugar. H. Schelenz.

37. **Syphilis and Stomach Disturbances.**—Among the differentiating points mentioned is that a syphilitic stomach lesion is generally associated with deficient or lacking acidity, while hyperacidity is more common with ordinary gastric ulcer. The syphilitic affection usually can be traced to a syphilitic gastritis during the secondary phase. Other characteristic features are the result of irritation of sensory nerves, periodically recurring pains and vomiting, with a sense of oppression in the stomach region. The effect of vigorous measures to combat the syphilis is peculiarly gratifying in this form. Gastric crises were pronounced in 37 per cent. of the 18 cases of tabes on which the article is based. In 6 the gastric acidity was normal, in 7 below and in 5 above normal. In an additional group of 7 other cases of tabes without gastric crises, but with various stomach symptoms, there was subacidity in all but one case. Thus there was subnormal gastric secretion in 52 per cent. of the total 25 cases. In 106 other syphilitics with more or less disturbance on the part of the stomach there was hyperchlorhydria in 15.1 per cent. and subacidity in 22.6 per cent.; symptoms suggesting irritation of the nerve roots in 18.9 per cent. and abortive gastric crises in 31.1 per cent. Achylia seems to be comparatively frequent in syphilitics. Chronic gastritis is probably responsible for it. Other characteristic features of syphilitic disturbance in the stomach are pains from irritation of the nerve roots; the pains have nothing really to do with the stomach but the patient refers them to the stomach. Also sensory phenomena from irritation of the vagus, which amount to actual abortive crises. Signs of irritation of motor nerves, outside of the typical crises, are also characteristic of syphilitic mischief. Hypersecretion and the accompanying symptoms, on the other hand, testify to an ulcer in the stomach regardless of whether syphilis is present or not.

38. **Orthopedic Treatment of Hemiplegia.**—Mayer declares that a man of 60 with hemiplegia from a cerebral hemorrhage requires orthopedic treatment just as much as a child with congenital or soldier with traumatic hemiplegia, and may respond well. That this fact is not generally appreciated was borne home to him particularly by two recent cases. The patients were men of 62 and 74 with hemiplegia for nine months and two years. They had been in the hands of various physicians and neurologists, but no one seemed to think there was any sense or use in correcting the resulting deformity. It was allowed to continue its progressive course, the consensus of opinion apparently being that the men were fortunate that they were not getting a second cerebral hemorrhage. Mayer applied a course of orthopedic measures, and within two months the deformity was almost entirely corrected and the gait very much improved. He gives illustrations of the spiral spring contrivance he uses to correct the dropping of the fore part of the foot, and of the spring splints for the arm and hand to correct the pronation of the arm and the contracture of the fingers. Much can be done in prevention after a paralytic stroke, applying splints, etc., so that the fore part of the foot does not get into the habit of dropping and the fingers of contracting.

40. **Treatment of Varices.**—Secher extols the numerous advantages of throwing a thread around the varicose vein and tying it, repeating this at short intervals along the entire course of the vein. The dressings are changed the twelfth day, when the threads are removed. The technic is simple and easy; it can be applied in the office or home and the outcome is excellent. Kuzmik has had only three relapses in 155 applications of this technic and Secher has had no recurrence of the varices in the four cases in which he has applied it, on both sides in all but one case. Stout silk is used for the ligation, and it is tied over a roll of gauze. The intima and media are separated by the strain from the ligature, and it is their growing together again that leads to the obstruction of the vessel. There are pains and numbness in the leg the first few days, requiring a sedative, and it is a little hard to walk at first, but these disturbances soon pass off.

Correspondenz-Blatt für Schweizer Aerzte, Basel

June 12, XLV, No. 24, pp. 737-768

43 *National Insurance of the Military in Switzerland. (Wirkung der Mobilisation auf der Militärversicherung und die daraus für die Aerzte erwachsenden Aufgaben.) R. Stähelin.
44 By-Effects of Vaccination Against Smallpox. (Pockenimpfschädigungen einst und jetzt.) O. Nägeli. Commenced in No. 23.

43. **State Insurance for the Military.**—In Switzerland every able-bodied man has to serve for a certain period in the army and each year must have a practice course of drill with the militia. During the latter they do not serve long enough to get accustomed to roughing it, while the drill and exposure are liable to induce acute articular rheumatism or rouse a latent tuberculous process. The financial burden of sickness insurance for the military is thus a heavy one, and Stähelin urges that it is the task of physicians now to make a special study of the subject. The present mobilization affords unprecedented opportunities for this. In the first place, the physical examination to determine the fitness for military service must be conscientious. The testimony of civilian physicians is extremely important here. The interests of the combatants, of the man himself and of the finances of the state insurance frequently clash. For instance, if men who have recently had pleurisy are accepted the ranks will be filled, but many of the men will become consumptives, and the insurance office will suffer financially. On one point all agree, namely, that all who are sick should be given the very best treatment. He relates that in the German cities in the west, the school buildings, factories, etc., that are being used for hospitals are as fully equipped as and have the general aspect of a good hospital, nothing makeshift about them. He was told that at Freiburg arrangements for equipping the hospitals were started several years ago, at a time when the political horizon looked threatening. Bed linen was accumulated in readiness for extensive hospital use. When the war broke out, the surgical and the medical departments were separated early, and each was placed in charge of experts, with ample means at their disposal. One school building used as a hospital has had a light addition built on, the entire height of the building, to provide water closets on each floor, as there had been none except in the basement before. Each floor of all the hos-

pitals also has its bath room. If no special room can be spared for the purpose, a space is partitioned off for it in some large room. All the plumbing, and gas cooking stoves, etc., were installed in a few days.

Münchener medizinische Wochenschrift, Munich

May 25, LXII, No. 21, pp. 705-736

45 *Prophylaxis of Cholera. E. Gildemeister and K. Baerthlein.
46 Sodium Citrate as Aid in Blood Transfusion. R. Lewisohn.
47 Digestibility of "War Bread." (Verdaulichkeit der Kriegsbrote.) J. Decker.
48 Hernia on the Median Line Incapacitates for Field Service. S. Plaschkes.
49 Arrhenal Ineffectual in Relapsing Fever. (Misserfolge der Arrhenalbehandlung bei Rückfallfieber.) P. Mühlens, Hegeler and Canaan.
50 *Gunshot Wounds of the Hip. (Hüftgelenksschüsse.) R. Göbell.
51 Treatment of Infected Wounds of Joints. (Infizierte Gelenke im Kriege.) H. Burckhardt and F. Landois.
52 *Bullet in the Heart Causing Slight Disturbance. F. Glaser and K. Kaestle.
53 *Bladder Disturbances in Soldiers. (Enuresis und ähnliche Blasenstörungen im Felde.) F. Böhme.
54 Six Months' Surgical Work Among French Prisoners of War. H. v. Bomhard.
55 Antifly and Antilouse Measures. H. Hecker and others.
56 *Metal Clamp as Substitute for Tourniquet. (Neue Methode der künstlichen Blutleere.) E. Sehrt.
57 Splints for Extension or for Mobilization of Stiff Joints. H. Buckhammer, F. Schede and L. Horn.

June 1, No. 22, pp. 737-768

58 *Problems in Regard to Pathology and Treatment of Dermatomycoses. Bloch. Concluded in No. 23.
59 *Rupture of Uterus Under Hypophysis Extract. (Uterusruptur bei Gebrauch von Pituitrin.) Züllig.
60 *Abdominal Wounds. (Bauchschüsse.) P. Kraske.
61 *Technic for Treatment of Fractures in War. (Wichtige Forderung für die Behandlung der Schussfrakturen.) G. Perthes.
62 Improved Plaster Casts. (Die Rabitzbrücke bei gefensterten Gipsverbänden.) F. Kuhn.
63 Sling and Extension without Bandage. (Stützungs- und Extensionsapparat als Ersatz aller kontentiven Verbände bei sämtlichen Verletzungen der oberen Extremitäten, Klavikula und Schultergegend.) J. Szilagyi.
64 *Wounds of the Eyes. (Augenerkrankungen im Felde.) M. Zade.
65 Prophylaxis of Gas Embolism in Injecting Oxygen. (Gasembolie bei Sauerstoffinjektionen.) G. Gaertner.
66 Weiss' Chromogen Test for Serodiagnosis of Typhoid. M. Rhein.
67 *Epidemic Stomatitis from Antilouse Measures. E. Grünbaum.

45. **Cholera.**—Gildemeister reviews much data on the subject of cholera and reports the results of bacteriologic examination of stools from seventy cholera patients. The cholera germs were not found for more than one, three or five days in a third of the stools, but in sixteen they were living for three weeks and in one stool each for from thirty-one to thirty-seven days and in one case for fifty-one days. The germs survived equally long in stools from healthy carriers. Mixed infection with dysentery and cholera has been frequently encountered in the eastern arena of war.

50. **Wounds of the Hip Joint.**—Göbell has been comparing his own experience with gunshot injuries of the hip joint and the published reports of similar injuries in the Balkan wars. When the wound is not infected, the prognosis is quite good, but the infected wounds terminated fatally in 60 per cent. of the Balkan cases. Analysis of these fatal cases leaves the impression that some might have been saved by an early operation. An early diagnosis and operative measures at the right time will certainly improve the outlook. If there is fever, search must be made for acute coxitis, and the joint must be examined with the Roentgen rays if possible. Early intervention will prevent abscesses; they leave conditions bad for resection later. In the twelve cases of wounds of the hip joint among the soldiers in his charge recently, three of the men died and four were barely saved by a tardy resection.

52. **Bullet in the Heart.**—The bullet came from a distance of over 600 feet and the man was knocked unconscious for thirty-six hours. He recuperated slowly but finally regained health and strength except that his left arm is impotent and he cannot breathe normally when he lies on either side. He also complains of stabbing pains in the left side, radiating from the costal arch to the shoulder and arm. These pains are sharper after eating, keeping up for about an hour. Otherwise he seems in perfect health but the Roentgen rays show a pointed bullet in the right ventricle, moving with the walls of the ventricle. Nine roentgenograms show the bullet from various angles.

53. **Enuresis in Soldiers.**—Böhme thinks that suggestions as to the nature and treatment of enuresis can be deduced from study of the cases of enuresis developing suddenly in soldiers on the firing line. He found that the men thus affected had practically all suffered from enuresis in childhood, and that it had developed now after prolonged exposure to cold and wet. This exposure, the chilling, had aroused a tendency to enuresis which had lain latent since childhood. Warmth, rest, avoidance of much fluid, none after 6 p. m., generally conquer the tendency. Böhme warns in particular against local measures at first.

56. **Clamp to Shut Off Blood Supply.**—An illustrated description is given of the instrument which grasps the limb in its semicircular jaws and permits graduated compression to shut off the blood supply more easily, rapidly and effectually than a tourniquet.

58. **Specific Hypersusceptibility in Dermatomycoses.**—Bloch's experiments have confirmed the assumption that certain infectious diseases of the skin confer allergy on the patient, so that he reacts in a specific manner to an extract made, like tuberculin, from the trichophyton fungus, the favus fungus, etc. The trichophytin, favin or sporotrichin induces a specific allergic reaction like the Pirquet reaction in tuberculosis. He regards the local focus as merely the anatomic expression of the localization of the allergy at the point of infection. According to these views every infectious disease of the skin is at the same time a general process, affecting to a greater or less extent the organism as a whole. These views justify treatment with the extract of the fungus in question, and he here reports favorable experiences with subcutaneous or intradermal injections of trichophytin or the killed fungi themselves. The article is to be continued.

59. **Rupture of the Uterus Under Hypophysis Extract.**—Züllig reports what he thinks is the sixth case that has been published of rupture of the uterus after hypophysis extract had been administered at term. In his case the fetus was unusually large in proportion to the rather contracted pelvis, and the woman had already borne twelve children. In all the cases on record the pelvis was contracted and there was a history of previous difficult deliveries in all but one.

60. **Abdominal Wounds.**—Kraske advocates early operative treatment of abdominal wounds in war. All with wounds in the viscera should be sent at once to an operating headquarters specially equipped for abdominal work. He has never encountered a case of actual gunshot injury of the intestines with recovery under conservative measures. All the men died in a few days from peritonitis. At first Kraske believed that the danger from operating under field conditions turned the scale against any attempt to operate for abdominal wounds, but he was finally able to fit up operating quarters which answered the requirements and permitted successful operations when all the men with severe abdominal wounds were brought to him there. The main thing is to provide a suitable place to operate in; then there will be no question as to the proper management of abdominal wounds.

61. **Gunshot Fractures.**—Perthes declares that too many fail to realize that the wound must be dressed without disturbing the immobilization. Any jar or displacement while the wound is being dressed does more or less harm. The plaster cast must be applied in such a way as to prevent this entirely while allowing free access to the wound. He gives some illustrations of casts which permit this and also protect against soiling the edges of the window in the cast. When the wound has healed, then extension and other measures can be applied as for a simple fracture.

64. **Wounds of the Eyes.**—Zade addresses his remarks to physicians who have seldom or never had occasion to treat injuries of the eyes but are now encountering them with appalling frequency. He warns that cocain banishes pain

only for a few minutes. It is useful to permit the eye to be cleaned out after a shell injury, and he urges all to familiarize themselves beforehand with everting the lid. Usually when the eye has been cleaned of foreign bodies, boric acid salve applied, and the eye bandaged, there is no further pain; if it keeps up, aspirin or morphin should be given. Unilateral conjunctivitis testifies to a traumatic origin; generally there is some erosion of the cornea. This can be discovered by watching the picture of the window in the eye as the patient stands from 6 to 9 feet from the window and keeps his gaze fixed on your hand held about 18 inches in front of his eyes. As you turn your hand and move it around, the eyeball follows it and it is possible thus to bring the reflection of the window on every point of the visible eye. Any erosion is at once recognized by a blurring in the picture of the window. The erosion requires at once disinfection with the boric acid salve and a protecting bandage. Left untreated it entails, almost inevitably, ulceration and iritis which can usually be warded off by early discovery and treatment of the erosion. With severe injury of the eye, the field surgeon's task is restricted to hurrying the man to a specialist after cleaning out and bandaging the eye.

67. **Epidemic Stomatitis from Mercurial Antilouse Measures.**—Grünbaum relates that a few days after the arrival of 800 Russian captives from one Siberian regiment, 200 of the men developed stomatitis and a number had sore throat. The clinical and bacteriologic findings were those of the Plaut-Vincent type of angina. The men with the angina were taken into the hospital where it was found that they were all wearing a strip of black cloth nearly two yards long and an inch wide, wound around their bodies on the bare skin. This band was impregnated with mercury; the droplets could still be seen glistening. The bands had been received about two weeks before as gifts from home, intended to drive lice away. Under treatment for mercurial poisoning the stomatitis and the angina were soon cured.

Therapie der Gegenwart, Berlin

June, LVI, No. 6, pp. 201-240

68 *Wounds of Peripheral Nerves. H. Oppenheim.
69 *Prognosis and Treatment of Severe Acute Middle Ear Disease. (Mittelohreiterungen.) F. Kobrak.

68. **Wounds of Peripheral Nerves.**—Oppenheim relates that one of the surprises of this war is the way in which all kinds of phenomena of paralysis from nonorganic cerebral and spinal processes are superposed and blended with the symptoms of direct injury of peripheral nerves, confusing and masking the true symptoms. The only clue through the maze of symptoms is the response to electric stimuli. The paralysis of nonorganic origin does not affect this response, so that normal findings differentiate such areas. He adds, however, that the individual variations in the location and course of the nerves are being found much greater than generally supposed.

69. **Otitis Media.**—Kobrak pleads for investigation of the blood with severe otitis media. When the blood is found sterile, operative treatment is seldom required. In one of his cases the temperature kept moderately high with pyemic remissions but no signs of involvement of bone. The only local symptom was slight pain on pressure on the lower wall of the auditory canal. The tenth day bacteria were found in the blood and at the operation the mastoid process and sinus were found normal but a pus pocket was discovered close to the bulb of the jugular vein. Prompt recovery followed its evacuation. The blood was sterile again the day afterward. When the bacteria get into the blood they may acquire new virulence and set up new foci in the spleen or marrow or elsewhere, independent of the primary focus. Otitis media that has recurred at times is liable to flare up anew during an acute infectious disease, and when this is the case and an operation is required for the bilateral otitis media, the ear that has had previous trouble should be perferably attacked. When the fever is constant and high from the first, there seems to be less liability to a complication requiring operative measures than when there is a shorter or longer drop in the temperature after a few days of high fever at the onset of the otitis media, and then the temperature runs up high again after this pause. In one adult the fever kept up for three months notwithstanding a mastoid operation; the sinus was sound but profuse secretion and pain kept returning. At one time during the protracted fever there was pain in one hip joint but it soon subsided spontaneously. Streptococci were found repeatedly in the blood. When the blood is sterile, conservative measures are justified, even with high fever for several days, if there are no local or general signs of complications. The sigmoid sinus seems to be the intermediate link with general infection, and hence the exploratory operation should be directed here.

Instead of a stormy onset and high fever from the first, the otitis media may start insidiously and after a mild course apparently subside but soon a serious complication becomes evident. He has found the *Streptococcus mucosus* responsible for this type, and warns that mucosus otitis should be kept under supervision for some time after it has apparently healed. Slight subfebrile temperature will warn that the process may be insidiously progressing. If there is only slight local reaction, Kobrak advises to wait until the local infectious process has become circumscribed to some extent. In one case the secretion contained no leukocytes but swarms of staphylococci; the temperature kept very high, sometimes 104 F., and the mastoid process was tender. The torpid reaction and the lack of urgent otoscopic indication justified waiting until the end of the second week. The operation then revealed that the spongiosa was soft and crumbly but no pus focus was found although the operation was carried into sound tissue. The fever dropped at once. The lack of suppuration shows that the tissues have little reacting power and hence that any operation is liable to throw open the portals to general infection. He gives two typical fever charts the characteristics of which throw light on the underlying processes.

Zeitschrift für Tuberkulose, Leipzig

May, XXIV, No. 1, pp. 1-80

70 Measures to Combat Tuberculosis in the Army During the War. (Massnahmen der Heeresverwaltung auf dem Gebiete der Tuberkulosebekämpfung während des Krieges.) Helm.
71 Tuberculosis in the English Army and Navy and in the English and French Colonies. E. Meissen.
72 *Evidences of Tuberculosis Found at Necropsy of Combatants. J. G. Mönckeberg.

72. **Necropsy Findings Suggesting Tuberculosis in Soldiers.**—Mönckeberg relates that he found signs of tuberculosis in over 31 per cent. of 85 cadavers of soldiers. The positive findings were in twenty-two Germans, one Belgian and four French soldiers, and five had succumbed to the disease. The others had been killed while fighting. The clinical course compared with the findings emphasizes that the less perfectly healed and the more extensive the latent tuberculous affection, the greater the danger of its being roused to activity by the vicissitudes of the campaign.

Zentralblatt für Chirurgie, Leipzig

June 5, XLII, No. 23, pp. 409-424

73 *Flap from Sternum to Close Gap in Skull; Two Cases. (Deckung von Schadeldefekten aus dem Sternum.) P. Müller.
74 *Flap from Fascia Lata to Reenforce Suture of Patella. R. Seubert.
75 Advantage of Compression in Treatment of Abdominal Wounds. (Zur Behandlung der Bauchschüsse mittels komprimierenden Verbandes.) O. Langemak.

73. **Sternum Flap to Close Gap in Skull.**—Müller comments on the drawbacks of taking a flap from the skull itself, the harm done the brain by hammering and chiseling on the skull, the unevennesses liable to be found when a flap is twisted around, and the difficulty of cutting a flap just the right size. These disadvantages are obviated by taking the flap elsewhere, and the sternum is especially well adapted for the purpose. It is easy of access and the spongiosa structure permits a flap to be readily scaled off. He has applied the method in two cases and was surprised at its advantages. In one case he used a sheet of fat to substitute the dura; over this he fitted the sheet taken from the sternum, setting it in the gap which it smoothly filled; it soon bent to conform

to the curve of the skull. The defect measured 2.2 by 6 c.c. The work was all done under local anesthesia.

74. **Suture of the Patella.**—A man of 52 fractured the patella and Seubert sutured it with catgut. Then a flap of fascia lata was implanted to cover the patella and sutured all around with fine button sutures. The drain was removed the fourth day and the eighth the small clips reenforcing the skin suture were removed. Massage of the thigh was begun the third day and the joint was cautiously moved the tenth day. By the fourteenth day the man was up and about and now, the fifth week, he can climb stairs without trouble.

Zentralblatt für Gynäkologie, Leipzig

June 5, XXXIX, No. 23, pp. 393-408

76 Acidosis in Pregnancy Intoxication. (Ueber die puerperale Osteomalakie.) J. Novak and O. Porges.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 6, XXXVI, No. 45, pp. 705-720

77 *Defective Development of Muscles in Connection with Lordosis and Albuminuria. (Distrofia muscolare ed albuminuria lordotica nei bambini.) A. Muggia.

78 Hair Pin in Bladder for Three Years. (Grosso calcolo vescicale da corpo estraneo.) De Franchis.

77. **Defective Development of Certain Muscles with Lordosis.**—Muggia comments on the inevitably progressive character of chronic disturbance in the innervation of a muscle, and the difficulty of distinguishing this neuropathic atrophy of a muscle or group of muscles from a primary atrophy. He gives illustrations of four children with typical atrophy of different groups of muscles, and hypertrophy in some. In one child of 9 the pectoralis showed pronounced atrophy after an attack of tonsillitis followed by considerable debility. It was difficult for the child to move her shoulder and there was consequent scoliosis. There were no signs of neuritis and improvement was realized under tonics and massage. In another case an infant developed normally for three weeks after birth, and then it seemed to have difficulty in moving its limbs and the wall of the chest seemed to sink in from the rapidly progressive atrophy of the muscles of the chest, and finally of all the muscles. It was impossible to elicit the knee jerk or brachial reflex. Electric tests showed reduced excitability in the legs but there was no trace of the reaction of degeneration. It lived only two months; the necropsy findings in the nervous system were apparently normal. None of the cases described showed the typical congenital atrophy of the muscles with which there is defective or arrested development of the peripheral motor neuron. A congenital muscular defect becomes apparent in the first few months of life and remains stationary, while this is not the case with dystrophy. One of the four patients described had lumbar lordosis and albuminuria, all of which improved as the general condition changed for the better, and became aggravated when there were signs of more pronounced kidney trouble. Under rest and dieting the albuminuria subsided and the dystrophy of the muscles also seemed to be arrested for the time being.

Policlinico, Rome

June 13, XXII, No. 24, pp. 785-820

79 Heart Block. (Caso di sindrome di Adams-Stokes.) D. Fabricci.

80 *Prophylaxis and Treatment of Venereal Disease in Active Army. P. Sabella.

81 Gallstones and Life Insurance. (La calcolosi biliare e l'assicurazione-vita.) I. Romanelli.

June, Medical Section, No. 6, pp. 241-292

82 *Organic Basis for Chorea. (La corea di Sydenham malattia organica.) F. Bonola.

83 Paralysis and Atrophy of Half of Tongue with Necropsy. (Della paralisi periferica dell'ipoglosso.) F. Alzona.

84 *Cervical Ribs. (Costa cervicale pseudosopranumeraria bilaterale. Ipoplasia unilaterale, a tipo radicolare, di alcuni gruppi muscolari del cinto scapolare destro.) L. Muratori.

80. **Venereal Disease in the Active Army.**—Sabella cites the various writers on this subject in the last few months, their number and prominence attesting the importance of the subject from the standpoint of military efficiency. In the recent Italian campaign in Lybia no prostitutes from Europe were allowed to enter the country, and the native prostitutes were kept under medical supervision twice a week. Those found diseased were sent to a special department of the civil hospital where they were interned and treated until danger of contagion was past. With this system of "hygienic brothels" and enlightenment of all the troops, Sabella was able to keep the incidence of venereal disease at a remarkably low figure both in the camps and the barracks, and this notwithstanding that syphilis is widespread among the native population and that its manifestations are grave and highly contagious in hot countries. Preventive measures have amply proved their usefulness in the navy, he adds. On return from shore leave each man is interrogated and, when there has been a chance for contagion, preventive measures are applied at once, washing with a 0.5 per thousand solution of mercuric chlorid, injecting into the urethra a few c.c. of a 2 or 3 per cent. solution of some silver salt, and smearing with a 30 per cent. calomel salve. Similar or even stricter measures should be enforced for the land troops, he declares. He is positive that a preventive packet for the men would prove its usefulness as much as the first-aid packet for dressing wounds now supplied regularly to every man in the service.

82. **Chorea.**—Bonola reviews the evidence as to Sydenham's chorea being of organic nature, supplementing the testimony of others by his own study of 22 cases. In 9 in this group there had been general febrile phenomena before the onset of the chorea; in 5 the children had had acute articular rheumatism and 2 had been subjected to a severe fright after which the chorea had developed suddenly. There was concomitant heart disease in 13 cases and in 6 the chorea had recurred. The reflexes were exaggerated in 14 of the 22 cases and 7 presented Gordon's tonic reflex, that is, the rapid elevation of the leg when the patella tendon is struck, the subject reclining on his back. The leg returns very slowly to its former position. It is equivalent therefore to an exaggerated reflex. The most significant testimony to the organic nature of chorea are signs indicating irritation or degeneration in the pyramidal tracts or cerebellar apparatus. He found evidences of such in many of his 22 cases, as he describes in detail, comparing his percentages with those in the literature. His final conclusion is that the evidence all tends to prove that some special affection of the nervous system is the organic basis for chorea.

84. **Cervical Ribs.**—Muratori has compiled from the records 200 cases of cervical ribs, bilateral in 86. They are more common on the left side. The deformity and functional disturbance, impeded circulation and nervous trouble may cause the most varied symptoms. In a case described some of the neighboring muscles were defectively developed. There was only the normal number of ribs, the cervical ribs having developed at the expense of the seventh cervical vertebra and being evidently responsible for the atrophy of the muscles on account of hypoplasia of the corresponding motor fibers in the nerve roots. As a rule, the disturbances from cervical ribs do not become manifest until between 15 and 30. Conservative measures to favor collateral circulation and combat the edema of the arm may be tried in mild cases. Electricity may improve the nervous disturbances, with salicylates, etc., to relieve pain. In rebellious cases the rib may have to be resected.

Riforma Medica, Naples

June 12, XXXI, No. 24, pp. 645-672

85 *War Typhoid and Typhoid After Vaccination. (Tifo di guerra e tifo dei vaccinati.) M. Ascoli.

86 Experimental Research on Agglutination After Treatment with Polyvalent Vaccine. (Tetravaccino Castellani, tifo paratifo A + paratifo B + colera.) F. P. Titone.

87 *Action of Ether on Ductless Gland System. (L'etere come anestetico e come eccitante in rapporto alla funzione del tessuto cromaffine.) G. Marchetti.

88 *No Appreciable By-Effects After Resection of Two-Thirds of Large Intestine. (Invaginamento ileocecale irriducibile; resezione dell'ultimo tratto dell'ileo cieco e del colon ascendente e del trasverso; guarigione.) R. Minervini.

85. **Agglutination After Vaccination Against Typhoid.**—Ascoli says that the serum gives a positive agglutination

reaction in every one who has been vaccinated against typhoid. The diazo and chromogen reactions, the leukopeny and aneosinophilia are also the same in the typhoid patient and in those merely vaccinated against typhoid. There is a difference, however, in that agglutination occurs at a greater dilution in true typhoid so that a quantitative serodiagnosis is still possible. The agglutination response varies also differently with true typhoid when the test is repeated. Cultivation of typhoid bacilli from the blood and bile (after ingestion of oil) and the hemolysis test are the main reliance now to differentiate typhoid patients and detect carriers. If the bile is added to bouillon containing serum known to agglutinate typhoid bacilli, if typhoid bacilli are present in the bile they will be agglutinated in clumps in six hours. Still another test he cites is to draw 1 or 2 c.c. of the blood into sterile water. After hemolysis has occurred, 2 or 3 c.c. of the clear red fluid is added to the bouillon containing serum known to agglutinate typhoid bacilli. Any typhoid bacilli present will thus become agglutinated in seven hours. The vital importance of early differentiation of typhoid emphasizes anew, Ascoli remarks, the wisdom of the army authorities in having provided each army corps with a well-equipped laboratory. He appeals to the medical men with the army to lay aside all skepticism and prejudices and cooperate zealously with the laboratories to get the full benefit from them.

87. **Ether Stimulates Suprarenal Capsules.**—Marchetti experimented on cats, injecting ether or giving it by inhalation in amounts proportionate to what are used in the clinic. He first established that the average epinephrin content in the cat suprarenal is 0.000,19 gm. Under the influence of the ether the epinephrin content increased. In 3 cats killed at once after the ether general inhalation anesthesia the content averaged 0.000,27; in 4, killed one or two hours afterward, it averaged 0.000,297, but it had returned to the normal average by the twenty-fourth hour. There was also an increase, but less pronounced, after injection of ether.

88. **Resection for Invagination.**—In the case reported, a woman of 45, mother of ten children, had sudden abdominal pain while working in the field. The invagination found at the laparotomy required resection of the lower part of the ileum, the cecum and ascending and transverse colon—a total of two-thirds of the large intestine. The case is notable from the rapid recovery and total absence of by-effects. The stools are of normal consistency and the health is perfect. The invagination probably had occurred suddenly but had gradually involved more and more of the intestine in the course of the three months before the operation.

Grèce Médicale, Athens

April, XVII, Nos. 7 and 8, pp. 13-16

89 Operative Treatment of Inguinal Hernia; Nine Cases. G. Dre Kolias. Commenced in No. 5.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIII, No. 3, pp. 411-506. German Edition. Last Indexed April 3, p. 1202

90 Speed of Nerve Conduction in Frogs. (Ueber das Einschleichen des Reizes beim Kaltfroschnerven.) T. Inouye.

91 Bacteriologic Research on Silk Worms. (Ueber die Pathogenität der sog. Sotto-Bacillen Ishiwata bei Seidenraupen.) K. Aoki and Y. Chigasaki.

92 *Leptothrix in Pulmonary Lesions. Y. Kato.

93 Synthetic Epinephrins. (Ueber die pharmakologischen Eigenschaften einiger dem Adrenalin nahestehender Substanzen, o-Dioxyphenylaethanolamin, Phenylaethanolamin, Ephedrin, Mydriatin.) M. Hirose.

92. **Leptothrix in Pulmonary Lesions.**—Kato found nothing but a leptothrix in pure cultures in the sputum of a young woman who died three months after the onset of symptoms suggesting pneumonia with pleurisy and considerable effusion in the pleura. The sputum was constantly serous and mucous, glassy and thready, never separating into strata and never malodorous. No blood or pus was ever found in it, no elastic fibers or scraps of lung tissue. From the first there were sharp pains in the left side on deep breathing and on coughing, but no chills nor fever for a week. Then the temperature began to rise and ran a remittent or intermittent course for the rest of the three months till death occurred from heart weakness. By the end of the second week the pulse was 140 and the cough and expectoration continued a progressive course. No bacilli or cocci could be cultivated from the sputum and no actinomyces, but filaments, coccus and rod forms of a leptothrix were found constantly at the bottom of the spitcup and could be cultivated in pure cultures, showing always these various forms. The leptothrix induced fatal chronic septicemia in mice, but seemed to be harmless for rabbits, monkeys, frogs and the fish tested. In a second similar case the symptoms and course were identical except that the fatal termination did not come until the sixth month. No tubercle bacilli were ever found but various other micro-organisms could be cultivated from the sputum. The necropsy findings are given in this case, but Kato does not venture to say whether the pulmonary processes were the work of the leptothrix or not. Charts and colored plates accompany the article.

Brazil-Medico, Rio de Janeiro

May 15, XXIX, No. 19, pp. 145-152

94 Brazilian Flagellate. (Spirorhynchus verrucosus n.g.n. sp.) A. da Cunha.

May 22, No. 20, pp. 153-160

95 Polyvalent Vaccines. (Sobre a questão das vaccinas polyvalentes.) A. Fontes.

96 *Renal Tuberculosis at Rio. (Nota sobre a tuberculose do rim no Rio de Janeiro.) A. Pereira. Commenced in No. 18.

96. **Tuberculosis of the Kidney at Rio de Janeiro.**—Pereira declares that in fully 20 per cent. of all cases of disease of the urinary apparatus at Rio, the trouble is of a tuberculous nature. The clinical manifestations of it are much milder than is the case in Europe, and consequently it is frequently overlooked or the symptoms ascribed to other causes. This may be due to the exceptionally vigorous defense of the organism against the infection, but he thinks the fact is due more probably to the exceptionally ineffectual resistance offered by the organism to the infection. It yields to the invading infection so soon and so completely that the processes in the lungs or elsewhere prove fatal before the kidney process has had time to manifest its presence. In his seventy-two cases of renal tuberculosis there were concomitant lesions in the apices in forty-three. The mortality from pulmonary tuberculosis is always high at Rio. In his experience, as the pulmonary lesions progressed the renal frequently came to a standstill. He discusses the question of nephrectomy in treatment, citing various views for and against it, his own opinion being that it should not be advocated unless severe disturbances, pain, etc., compel intervention. The patient is left still tuberculous, as a rule, after removal of the tuberculous kidney. The ordinary measures for treating tuberculosis should be systematically applied and if in six months there is no improvement or if the patient is running down nephrectomy should be considered.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

May 29, I, No. 22, pp. 1847-1926

97 Proportion of Women to Men in the Netherlands. (De geslachtsbreuk in de bevolkings-statistiek.) H. H. van Eijk.

98 Improved Technic for Blood Platelet Count. (Een eenvoudige telmethode voor bloedplaatjes.) M. A. van Herwerden.

99 Familial Occurrence of Eyes of Different Colors. (Een familiaire oogafwijking.) F. A. van der Breggen.

100 Quantitative Test for Phosphoric Acid in the Urine. (Eenvoudige methode om in urine het gehalte aan phosphorzuur te bepalen, en iets over de aciditeit van de urine.) L. de Jager.

Hospitalstidende, Copenhagen

May 29, LVIII, No. 21, pp. 509-532

101 *Spontaneous Rupture of Rectus Muscle with Extravasation of Blood. (Om Haematoma m. recti abdominis, opstaaet ved Spontanruptur af Musklen.) J. Lambrethsen.

102 Vaccine Therapy of Whooping Cough. (Kighostebacillen: Bordet-Gengous bacil.) A. H. Meyer.

June 2, No. 22, pp. 533-556

103 *Cure of Prolapse of the Rectum by Fascia Graft. I. Svindt.

104 *Chronic Lead Poisoning in Potters. (Kronisk Blyforgiftning hos Pottemagere.) C. Gram.

June 9, No. 23, pp. 557-580

105 *Cancer of the Uterine Cervix in Syphilitic Ulceration. (2 sjaeldent forekommende Lidelser paa Collum uteri.) I. Kaarsberg.
106 *The Meiostagmin Reaction at Room Temperature. O. Wissing.

101. **Spontaneous Rupture of the Rectus Muscle.**—Lambrethsen's patient was a woman of 66 who had borne three children and whose gallbladder had been removed ten years before. A fistula had been left for four years but finally healed. During an attack of coughing sharp pain developed in the left lower abdomen and a small tumor could be felt. Torsion of an ovarian cyst was the presumptive diagnosis, but the trouble proved to be a hematoma from rupture of the rectus muscle. All disturbances ceased after the blood had been cleaned out and the region drained. The few similar cases on record are compared with this; there was a history of considerable violence as the cause of the rupture in the cases in the literature. The extravasated blood has to be removed or complications may follow.

103. **Strip of Fascia to Correct Prolapse of the Rectum.**—Svindt lauds the fine results of Thiersch's method of treating prolapse of the rectum and anus by running a strip around above the anus and drawing it up to close the opening to the normal size. Thiersch uses wire but Svindt thinks that a strip of fascia has all the advantages of this with none of its drawbacks. He relates the details of a case in which the benefit was peculiarly striking. The child had had prolapse of the rectum since the age of 4 months; when it was 15 months old, this method was applied after the prolapse had been reduced. Four radial incisions were made through the skin and subcutaneous tissue around the anus, about 1 cm. from the mucosa. While the slight bleeding was being staunched, a strip of fascia was cut from the outside of the right thigh, about 8 cm. long and 0.75 cm. wide. This was carried around the anus with a stout curved needle, introducing it at the back incision and bringing it out in the front incision (the side ones proved superfluous). The ends of the fascia strip were then brought up and drawn up tight enough so that only the little finger could be insinuated into the anus. The ends were then sutured together with silk and buried. The side of the fascia that had been next the muscle was turned inward. Healing proceeded smoothly and there is no longer any tendency to prolapse. With adults it is better to give something to bind the bowels for a while.

104. **Lead Poisoning in a Potter.**—The man entered the hospital for chronic nephritis with hypertrophy of the heart, high blood pressure and albuminuric retinitis—all of which were probably the result of chronic lead poisoning at his trade. Drugs will have to be given very cautiously in this case on account of the defective elimination.

105. **Syphilitic Origin of Certain Uterine Cancers.**—In Kaarsberg's first case there was merely typical branching leukoplakia on the uterine cervix. In the second case a cancer had developed in a syphilitic ulceration, and in the third there was an incipient cancer in the cervix of a syphilitic. Franceschini has reported a case in which a tertiary lesion developed into cancer under his eyes. He has also found a positive Wassermann in many patients with uterine cancer, and declares that uterine cancer should be included in the parasyphilitic affections. Others have reported simple syphilitic lesions and hemorrhages in the uterus, cured by mercurial treatment, in both acquired and inherited syphilis. Whitehouse found a positive Wassermann in 7 of 18 and McIlroy in 10 of 24 cases of metritis (1913). Pacola and Cioja are said to have found circumscribed and diffuse infiltration and connective tissue changes in the uterine cervix impeding delivery in certain cases, which proved to be of a syphilitic nature. Hoffmann has published a case of gummatous endometritis. Kaarsberg thinks that these facts, along with others he mentions, demonstrate the necessity for suspecting syphilis in every case of erosion of atypical aspect.

106. **Meiostagmin Reaction.**—Wissing applied to 115 serums Ascoli's technic for this reaction but found that the results were much clearer when the serum had not been warmed. He obtained a positive reaction in all the febrile cases, in nearly all the pregnant women in the latter half of the pregnancy, in failing compensation with heart disease, in cirrhosis of the liver and severe jaundice, in severe but afebrile pulmonary tuberculosis, and in a few cases of severe diabetes, chronic nephritis with uremia, and chronic rheumatism. There is little danger of any in this list being mistaken for cancer, unless possibly icterus gravis. On the other hand, none of the affections which are liable to simulate cancer gave a positive response, neither gastric ulcer, chronic gastro-intestinal irritation, afebrile surgical tuberculosis, chronic gynecologic affections nor syphilis. The reaction was positive in 82 per cent. of the forty cancer cases, and his conclusion is that this reaction may prove a valuable aid in the differential diagnosis of cancer although it is by no means specific.

Norsk Magazin for Lægevidenskaben, Christiana

June, LXXVI, No. 6, pp. 697-856

107 *Rapid Growth of Children Predisposes to Morbidity. (Vekst og sygdom. "Les maladies de croissance.") C. Schiøtz.
108 Scleroderma in Man of 39. N. B. Koppang.
109 *Possibility of Spontaneous Cure of Detachment of the Retina. (Om nethindeavløsningens spontane helbredelighet og værdien av dens behandling.) S. Holth.
110 *Diagnosis of Tumor in Cerebellopontine Angle. (Et tilfælde av cerebellopontin tumor—behandliet med subtentoriel dekompression—samt generelle betragtninger over cerebellardiagnostikken.) G. H. M.-Krohn.

107. **Growth and Morbidity.**—Schiøtz during 1913 and 1914 made physical examinations of eighty-six schools, with a total of 8,727 pupils, and discusses the data thus obtained. The boys were the tallest up to the age of 11, but then the girls grew taller than the boys up to 14. At 8 and at 11 they averaged the same height. The district inspected is known as a goiter region, and from 3 to 12.8 per cent. of the boys at various ages and from 4.3 to 23.9 per cent. of the girls showed enlargement of the thyroid. The disposition to morbidity was most pronounced when the environment was unhygienic, and this was particularly evident in respect to goiter. About 9 per cent. of the 4,459 boys had goiter and 14.3 per cent. of the 4,268 girls. The morbidity, especially the tendency to goiter, was most pronounced in the periods of most rapid growth, that is, just preceding puberty. The largest proportion of children with goiter were among the taller children—in short, all the data presented confirm the old idea that children growing too fast are particularly liable to morbidity of almost any kind. Schiøtz goes beyond this, declaring that even the periods of normal growth predispose to morbidity. The monotony of life in the country districts is reflected in the lesser height of country children; the nerve stimulation of city life causes city children to be more alert, the thyroid functions with greater intensity and the skeleton develops better. The country children as a rule were not so healthy as the city children. They have fresh air and fresh milk in abundance but they do not take advantage of them, and unhygienic sleeping rooms are the rule. The conditions among the children in regard to orthostatic albuminuria, tuberculosis, school anemia, heart disease, diabetes, headache, syphilis and chorea are analyzed in turn. The proportion of cases of chorea was twice as large among girls as among the boys, and occurred at a later age period.

Schiøtz' figures show further that, in the northland at least, there is a seasonal difference in the growth. It is least from August to December and greatest in April and till the end of July. The children grow much taller during these latter months, and the weakening influence of this predisposes to morbidity of all kinds, and yet these are the months of the "final examinations" and cramming for them. Schiøtz pleads to have the school vacations begin earlier, and have the examinations changed to some other season, not go counter to Nature as at present. He comments on the greater tendency to morbidity of girls after the age of 11. The years preceding puberty, the years of most intense growth, are trying times physically for girls, the future mothers of the race, while they work and study more conscientiously than boys. The child grows taller too fast for the rest of the body to

keep pace with this development. This or that organ has not developed yet enough to take care of the extra amount of work thrust on it by the increased metabolism of the taller frame.

109. **Chances for Spontaneous Cure of Detachment of the Retina.**—Holth reviews his own experience and that of a number of leading ophthalmologists. Spontaneous cures are discovered mostly by retrospective diagnosis. He now makes a practice, he says, of telling every patient with a laceration in the detached retina that he has never seen a case of cure under these conditions. If it is the only good eye, an attempt at treatment may possibly be justified. Pre-equatorial sclerectomy has more cures to its credit than any other technic, and it has the advantage of acting quickly, which is naturally of the greatest importance for the reestablishment of the functioning of the retina.

110. **Cerebellopontine Tumor.**—Krohn's patient was a woman of 25 who applied for relief from headache and weakness of the left arm and leg, that had been noted for the last two months. The results of examination are related, illustrated and discussed in detail, the case proving an unusually typical instance of a cerebellopontine tumor. Decompressive trephining relieved the symptoms materially but the hard growth, the size of a walnut, plainly seen in the cerebellopontine angle, was too closely adherent to the bone to be removed. Reexamination nearly a year later showed gait and speech quite normal and the woman felt well although there was still a slight tendency to paresis. At the time of the operation she had headache, occasional choked disk, vomiting, nystagmus and the cerebellar speech and gait. On the same side as the tumor she presented paresis of the fifth to the eighth cranial nerves, and occasionally of the tenth and twelfth, hypotony, asynergy, adiadokokinesia, catalepsy, deviation and dysmetria. (By this latter term he means the inability of the patient to draw a series of parallel lines between two vertical lines. The right hand ends of the lines never reach to or else they extend beyond the right vertical line.) On the opposite side the patient showed hemiparesis and positive Babinski, with hemianesthesia.

Svenska Läkaresällskapets Handlingar, Stockholm

XLI, No. 1, pp. 1-318

111 *The Ductless Glands and Disturbances in the Skeleton and in Development in General. (Om endokrina skelett- och utvecklingsrubbningar.) A. Josefson.

111. **Influence on Growth of Disturbance in Ductless Gland System.**—The 320 pages of this bulky volume are devoted to illustrated descriptions of fifty cases in which anomalies in growth and development seemed to be traceable to some upset in the internal secretions. Josefson defines with special details the condition which he calls hyporchism. There is hypoplasia or atrophy of the testicle although the external secretion may be within low normal range. The physical development shows a deficiency in the internal secretion, the feminine growth of the hair on head and body, the general feminine aspect of the body, like that of an elderly woman; roentgenoscopy shows various development defects in the skeleton, and the legs are abnormally long, averaging about 58 per cent. of the height, often with a tendency to genu valgum. The genital organs are infantile. In women the aspect resembles the masculine type. In both sexes, the developmental changes vary with the age at the time of the disturbance. In one typical case of hyporchism the man of 29 complains of lassitude and weakness with occasional headache, occipital or frontal, and some impairment of vision and hearing of late; he sweats readily and is often chilly and the hands and feet are clammy. The man seems morose and silent, sluggish in his movements, his voice high and weak. He was given a three months' course of testicle tablets but no effect was apparent. Then thyroid treatment was begun and in a short time there was a masculine growth of hair on the upper lip and chest. In a case with signs of ovarian insufficiency, "hypovarism," the girl of 15 never menstruated until after a course of thyroid treatment. In neither of these cases was the thyroid the gland at fault, in all probability, but the thyroid treatment seemed to restore the balance in the internal secretions. In other cases benefit followed testicle or ovary treatment. Some of the other cases reported were examples of hyperovarism; one girl of 11 was as sexually mature as a woman of 20; the ovary was in cystic degeneration.

The majority of the cases discussed are examples of deficient or excessive thyroid functioning and improvement was easily realized under appropriate organ treatment, as for instance under thyroid plus hypophysis treatment for goiter and myxedema in a woman of 41. A man of 27 with an exceptionally small sella turcica, hyporchism, and signs of incomplete development of the skeleton had been treated in America by implantation of hypophysis and pineal gland tissue as he had shown signs of extreme nervousness and tendency to mental derangement. After the operation he had required asylum treatment and again a year later after an interval of improvement. It is in cases such as these, Josefson adds, that early implantation of testicle tissue offers a prospect of success. The other glands with an internal secretion have been functioning defectively for years and vicarious functioning may have been developed. But the testicles have not had such a long period of functioning and hence there is greater prospect of remedying deficit disturbances in this line. In this case last mentioned they were analogous to those following castration; if testicle tissue had been implanted in time the insanity, etc., might possibly have been warded off.

Inhibition of genital functioning seems to be associated with abnormal growth in height, while excessive genital functioning during the years of physical development tends to bring the growth to a prematurely early conclusion. The influence of the ovaries and testicles on the development of fat seems to be exactly opposite; boys grow fat if the testicle function is deficient, while girls grow abnormally fat if their sexual glands are functioning to excess. Josefson takes up each of the ductless glands in turn and discusses the special manifestations of their deficient, defective, excessive or perverted functioning. Rational organ therapy under critical supervision is liable to produce brilliant results, as testify many of the cases he reports. Everything suggesting a disturbance in development, especially anywhere in the skeleton, should be studied with particular care from the standpoint of the ductless glands, Josefson affirms. School inspectors and family physicians have here a new field for research and results of paramount importance for the rising generation will follow when practical and theoretical medicine work hand in hand.

Ugeskrift for Læger, Copenhagen

May 27, LXXVII, No. 21, pp. 825-874

112 Gunshot Wound; Accident or Suicide? (Skudsaar; Ulykkestilfælde eller Selvmord.) E. A. Tscherning.

113 Advantages of Electrocoagulation in Treatment of Papillomas in the Bladder. (Om endovesikal Behandling af Blærepapillomer.) S. Prior.

June 3, No. 22, pp. 875-922

114 *Albumin Milk in Infant Feeding. (2½ aars Erfaringer med Aeggehvidemaelk.) V. Poulsen.

115 Poisoning from Young Veal. (Kalvekødforgiftning.) H. Hansen.

114. **Albumin Milk in Infant Feeding.**—Poulsen found in eighty-five infants less than a year old that albumin milk had no advantages over other methods of feeding when the children had acute gastro-enteritis. Equally good results can be obtained by other means. It did not prove beneficial in the cases of atrophy. But in chronic dyspepsia the effect far surpassed that of any other measures, and he extols the albumin milk as a great advance in these cases. It is necessary to begin with small doses and rapidly increase them; a four-weeks' course is generally sufficient. The change to other food should be made very gradually. In another group of thirty-eight children, from 1 to 5 years old, the albumin milk was given to supplement other food and the results were strikingly good in all the twenty-nine chronic cases. Poulsen rejects all of the explanations advanced as yet to explain the benefit from the change to albumin milk. It is most effectual in chronic diarrhea in infants over a year old.